



Illuminating Engineering in Relation to Architecture

By LAWRENCE M. TYE.

[Read before the Royal Institute of British Architects, Monday, 20 November 1922.]

IN presenting this paper before your Institute it is my intention to indicate the rapid strides which have been made in Illuminating Engineering during quite recent years, and although it is impossible in one paper in any way completely to cover the subject, I hope to show how it has developed and become an applied science, enabling light to be dealt with as a definite quantity, predetermined with exactitude, and no longer giving way to rule-of-thumb application.

In order fully to realise the progress that has been made in Illuminating Engineering in recent years, it is interesting to review the changes which have taken place with our illuminants.

In early history lighting was confined to the use of vegetable oils and animal fats, contained in open braziers. The next advance was the introduction of the candle, which remained with us through the middle ages and until the time of the introduction of petroleum.

The early use of petroleum was followed by the introduction of gas lighting and the electric arc round about the year 1809, but it was not until Swan and Edison's introduction of the electric glow-lamp in 1879 and Welsbach's discovery of incandescent mantles in 1883 that real progress began to be made.

The success of gas and electricity as illuminants, particularly with subsequent progress in their efficiency, has led to the enormous application of arti-

ficial lighting, and installations have been made indiscriminately, in many cases without any regard being paid to physiological requirements or its application to get the best effects.

In the first place this advancement in the efficiency of illuminants has brought with it such high values of intrinsic brilliancy or surface brightness that it has become positively dangerous, apart from discomfort from the point of view of vision, to employ modern light sources without due precaution being taken to suppress glare, independently of light distribution.

As an example, with our early oil lamps the intrinsic brilliancy of the source was in the order of 3-8 candles per square inch. In the case of the modern gas-filled electric lamp this figure has reached as high a value as 2,000 candles per square inch. This in contrast to the brightness of average white sky, which is given as in the order of 2.5 candles per square inch.

From this will be gathered the need for the judicious application of modern light sources and for suitable methods to be applied to suppress glare.

This consideration brings us to the fact that there is a correct standard or intensity of illumination for any given class of service; thus by under or over lighting a given area you produce an unnatural condition upon the eye with the result that eye strain and consequent fatigue set in.

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These standards have been carefully collated by illuminating engineers, operators and specialists on eyesight, and a table closely complying with the following is generally to be found in the technical data issued by firms who specialise in Illuminating Engineering.

TABLE I.

Art Gallery (Walls)	..	..	..	..	4'0 to 5'0
Automobile Showroom	..	..	..	..	4'0 to 6'0
Bank (General)	..	..	..	..	3'0 to 4'0
Bath (Public)—Dressing Rooms	..	..	..	..	1'0
Swimming Bath	..	..	..	..	2'0
Billiard Room (General)	..	..	..	..	1'0 to 1'5
Billiard Table	..	..	..	..	10'0 to 15'0
Courts—					
Squash	..	..	..	..	3'0 to 6'0
Tennis	..	..	..	..	3'0 to 6'0
Church	..	..	..	..	2'0 to 3'0
Cinema	..	..	..	..	1'0 to 2'0
Desk	..	..	..	..	4'0 to 6'0
Drawing Office	..	..	..	..	6'0 to 10'0
Drill Hall	..	..	..	..	2'0 to 3'0
Engraving	..	..	..	..	10'0 to 12'0
Factory—					
General Illumination	..	..	..	..	1'0 to 2'0
General Illumination without local lighting	..	..	..	..	4'0 to 6'0
Local Bench Illumination	..	..	..	..	3'0 to 5'0
Local Bench Fine Work	..	..	..	..	5'0 to 10'0
Garage	..	..	..	..	2'0 to 3'0
Gymnasium	..	..	..	..	2'0 to 3'0
Hospital—					
Corridors	..	..	..	..	0'5
Wards (with no local illumination)	..	..	..	..	1'0 to 2'0
Wards (with local illumination)	..	..	..	..	0'5
Operating Table	..	..	..	..	10'0 to 15'0
Laundry	..	..	..	..	2'0 to 3'0
Library—					
Stock Room	..	..	..	..	1'0 to 2'0
Reading Room (without local illumination)	..	..	..	..	3'0 to 4'0
Reading Room (with local illumination)	..	..	..	..	1'0 to 1'5
Market	..	..	..	..	2'0 to 3'0
Museum	..	..	..	..	3'0 to 4'0
Office (General)	..	..	..	..	4'0 to 6'0
Power House	..	..	..	..	2'0 to 3'0
Railway Carriage	..	..	..	..	2'0 to 3'0
Reading (Ordinary Print)	..	..	..	..	3'0 to 4'0
Reading (Fine Print)	..	..	..	..	5'0 to 6'0
Residence—					
Porch	..	..	..	..	0'5
Hall (Entrance)	..	..	..	..	0'5 to 1'0
Drawing Room	..	..	..	..	2'0 to 3'0
Sitting Room	..	..	..	..	2'0 to 3'0
Dining Room (General)	..	..	..	..	0'5
(Local on Table)	..	..	..	..	4'0 to 6'0
Kitchen	..	..	..	..	2'0 to 3'0
Bedroom (General)	..	..	..	..	1'0 to 2'0
Dressing Table	..	..	..	..	3'0 to 4'0
Restaurant	..	..	..	..	3'0 to 4'0
Rink (Skating)	..	..	..	..	2'0 to 3'0
School—Classroom	..	..	..	..	3'0 to 4'0
Corridor	..	..	..	..	0'5
Sewing—Light Goods	..	..	..	..	2'0 to 3'0
Dark Goods	..	..	..	..	6'0 to 8'0
Shop Window—					
Light Goods	..	..	..	..	8'0 to 10'0
Medium Goods	..	..	..	..	10'0 to 12'0
Dark Goods	..	..	..	..	12'0 to 15'0

Shops (Interior)—

Light Goods	..	..	..	..	4'0 to 6'0
Dark Goods	..	..	..	..	6'0 to 8'0
Station (Railway)	..	..	..	..	1'0 to 2'0

Street—

Business (not including light from shop windows, etc.)	..	..	..	..	0'25 to 0'5
Residence	..	..	..	..	0'1
Country Roads	..	..	..	..	0'05
Studio	..	..	..	..	4'0 to 6'0

Theatre—

Lobby	..	..	..	..	3'0
Auditorium	..	..	..	..	2'0
Train Shed	..	..	..	..	0'5 to 1'0
Typesetting	..	..	..	..	6'0 to 8'0
Warehouse	..	..	..	..	0'5 to 1'0
Wharf	..	..	..	..	0'25 to 0'5

The necessity for correct lighting was early realised in important and official circles, and the bearing that it has on the welfare of the community. A good deal of the credit of this is due to the work of the Illuminating Engineering Society, and the very active work of their Honorary Secretary, Mr. Leon Gaster.

One of the first of their achievements was a thorough investigation into the lighting of schools and classrooms, under both daylight and artificial conditions. Their findings were given in the *Illuminating Engineer Journal*, July, 1913, and July, 1914.

This was followed by a thorough enquiry into the lighting of factories and workshops.

In January, 1913, the Home Secretary formed a Committee, under the Chairmanship of Sir Richard Glazebrook, Director of the National Physical Laboratory, to enquire and report on the conditions necessary for the adequate and suitable lighting of factories and workshops, having regard to the nature of the work carried on, and the protection of the eyesight of the workers.

This Committee issued its first report in 1915 (Cmd. 8,000). This was a most complete investigation and upwards of 4,000 readings were recorded in various factories with an illumination photometer, dealing both with day and artificial lighting.

In this report it was recognised that good illumination is essential to the health, safety and efficiency of the worker, and evidence on these points was given.

The relation between proper lighting and the avoidance of accidents was particularly emphasised.

Records of accidents throughout the year show that they are most common during the dark winter months, and especially does this apply to persons falling.

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This first report specified certain minimum values of illumination desirable in the interests of safety and general convenience, irrespective of that needed for the actual carrying out of the work.

In the Committee's second report, issued in June, 1921 (Cmd. 1418), there is a special recommendation in regard to the avoidance of glare. They advise that:

"Every light source, excepting one of low brightness, *i.e.*, batwing burner or paraffin flame), within a distance of 100 ft. from any person employed, shall be so shaded that no part of the filament mantle or flame shall be distinguishable through the shade unless it be so placed that the angle between the line from the eye to an unshaded part of the source and a horizontal plane is not less than 20°, or in the case of any person employed at a distance of 6 feet or less from the source, not less than 30°."

These requirements will be found to be met by the best types of modern reflectors designed so that the lamp filament has its focal point well within the reflector.

In the third report, issued in March, 1922 (Cmd. 1686), the question of working illumination is considered. The Committee gives a schedule dividing up the various operations and indicates the intensities that should be provided.

Having very briefly considered the attitude of the Government on matters relating to illumination, it is now my intention to show the basic principles of illuminating engineering.

Table 2 gives definitions for a number of terms most frequently referred to in illuminating engineering.

TABLE II.
Definitions.

The Candle Power is the unit of intensity of light.

Mean Horizontal Candle Power (M.H.C.P.) is the average candle power given off in a horizontal plane about a lamp whose axis is vertical.

Mean Spherical Candle Power (M.S.C.P.) is the mean of the candle powers in all directions about a lamp.

$$\text{M.S.C.P.} = \frac{\text{Total Lumens}}{12.6}$$

Foot Candle is the unit of intensity of illumination =

$$\frac{\text{Candle Power}}{\text{Distance}^2}$$

Lumen is the unit of quantity or flux of light. One Lumen of light is the quantity producing one foot candle intensity of illumination over an area of one square foot.

Total Flux (Lumens) = M.S.C.P. \times 12.6.

Lumens = Foot Candles \times Square Feet.

We will defer a detailed explanation of these until the showing of the lantern slides.

To study a light source intelligently it is necessary to have before us a light distribution or photometric curve in order to show the exact manner in which the light rays are distributed. This is so important that I should like to urge that no lighting unit be seriously considered unless this data is made available.

One method of obtaining these photometric curves is by taking measurements at the various angles through the vertical axis of a light source.

Fig. 1 gives such curves for the ring filament and zig-zag filament gas-filled lamps respectively.

It will be noted that the major portion of the light is emitted in the angles 30° each side of the horizontal, which in the usual way would be absorbed by the walls and ceiling.

Dividing the total light into three equal angle zones of 60° each we get approximately:

25 per cent. of the total light given from 0-60° from the vertical.

50 per cent. of the total light given from 60-120° from the vertical.

25 per cent. of the total light given from 120-180° from the vertical.

* With direct lighting the only useful light is that given between 0-60 degrees other than by reflection from walls and ceiling. Therefore using a bare lamp with dark surroundings only 25 per cent. of the total light would be usefully employed.

It will therefore be seen what a great field there is for efficient lighting by the use of correctly designed reflectors.

There are in the main three methods applied to the lighting of interiors, *i.e.*, direct, semi-indirect, and indirect.

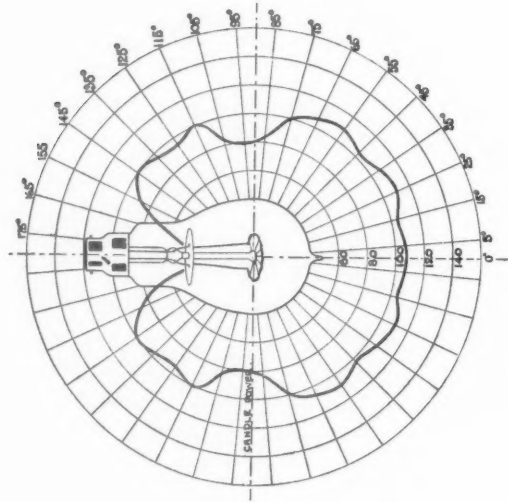
Direct lighting will first be considered, as it is unquestionably the most efficient, and results can be pre-determined with extreme accuracy. This method is at least dependent upon favourable surroundings, *i.e.*, those having a high co-efficient of reflection.

By direct lighting with prismatic reflectors it is possible to redirect 75 per cent. of the total light immediately to your working plane, whilst transmitting in addition 20 per cent. for the illumination of walls and ceiling.

In general practice with direct lighting it is found that at least three distinct and definite types of light distribution are necessary. These, for distinction, are usually termed extensive, intensive, and focussing.

CANDLE-POWER DISTRIBUTION CURVE

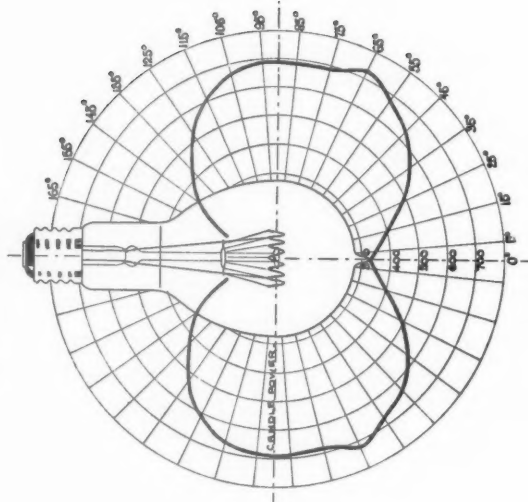
200 v. 100 w. Gas Filled Lamp.
1,200 Lumens. 96 M.S.C.P.



LIGHT FLUX : $0^{\circ}-60^{\circ}=28\%$
 $60^{\circ}-120^{\circ}=49\%$
 $120^{\circ}-180^{\circ}=23\%$

CANDLE-POWER DISTRIBUTION CURVE

200 v. 500 w. Gas Filled Lamp.
7,300 Lumens. 580 M.S.C.P.



LIGHT FLUX : $0^{\circ}-60^{\circ}=25\%$
 $60^{\circ}-120^{\circ}=59\%$
 $120^{\circ}-180^{\circ}=16\%$

FIG. 1.

E. STROUD,
Nov., 1921.

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The extensive type reflectors are required for the lighting of low buildings, or where the distance between the points is rather great. The correct spacing ratio, *i.e.*, distance apart to height, for this type reflector, is 2 to 1 for the attainment of uniform lighting. Thus for points spaced, say, 18 feet apart, the correct height would be 9 feet above the plane you are illuminating, which is usually 2 feet 6 inches above the floor level.

The intensive type reflectors are required for the illumination of buildings with average ceiling heights and spacings. The correct ratio in this case for uniform lighting is $1\frac{1}{2}$ to 1, thus for the example cited above, *i.e.*, 18 feet spacing, the correct height would be 12 feet.

The focussing type reflectors are required for the lighting of buildings having high ceilings. In addition they are employed for the efficient lighting of buildings with galleries, where the low mounting of light units would bring them into the direct range of vision. In other cases the focussing type is used where concealed lighting effects are aimed at.

Particularly are focussing type units necessary in the case of factory lighting with overhead travelling cranes. In practice it is generally desirable to adopt as high a mounting height as possible, consistent, of course, with reasonable accessibility. By doing this you reduce the liability of glare, and the extent to which shadows are reduced in consequence is particularly noticeable. This latter point is emphasised in school lighting where you get a rising floor level.

For exceptional purposes, such as highly localised lighting, shop windows which are narrow in relation to their height, even more concentrating reflectors than those coming under the heading of focussing are required.

Now in adopting these greater mounting heights it does not follow that the lighting efficiency of an installation suffers in consequence.

In order to cover 12 feet at a height of 6 feet the light rays need to be collected into a zone of 45° . Again, to cover the same distance at a height of 8 feet the light rays need to be collected into a zone approximately 30° . Again, to cover the same distance at a height of 12 feet, the light rays are concentrated into as small a zone as 20° , but in each case with a corresponding increase in the end-on candle-power.

This is the reason why the illumination intensities are the same in either of the three cases cited above.*

It is now as well to consider the various media available for the control of light, and to see how far they may be expected to comply with the requirements as set out above.

From the point of view of efficiency and flexibility of control, also for complete conformity with the fundamental laws of optics, we will first consider prismatic glass reflectors. These reflectors are designed on the principle of total reflection and by modification in the contour it is possible to obtain any type of light distribution from extensive to extremely concentrating.

The definite character in which these results are achieved will be seen on reference to Fig. 2.

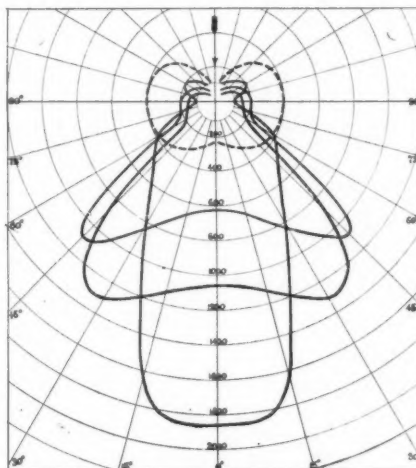


FIG. 2

Opalescent glassware, whilst giving good diffusion, has not such complete control of the light. Incident rays on reaching the opal surface are mostly broken up and scattered more or less equally in all directions. Thus whilst the contour of an opalescent reflector may be varied as much as is desired, it does not appreciably affect its final light distribution curve, which remains of a general character.

Vitreous enamelled reflectors suffer from the same defect, that alteration in contour does not appreciably alter the character of the final light dis-

* For a detailed explanation of light distribution and zone factors refer "The Lighting of Modern Commercial Buildings—Underlying Principles," by Capt. E. Stroud, *Architectural Journal*, 4 January 1922.

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tribution curve, which limits their application in practice for most efficient lighting.

SEMI-INDIRECT LIGHTING.

Semi-indirect lighting units comprise a translucent dish made of opalescent glass, prismatic glass, or alabaster. They send most of the light to the ceiling, from which it is reflected downwards, but a certain percentage passes through the units itself, depending upon the density of the medium.

This method of lighting must of necessity be more wasteful than direct lighting, considered from the point of view of energy, seeing that the ceiling has to be converted into a secondary source. The reflection co-efficient for a good white ceiling is 82 per cent., which immediately creates an absorption independent of that of the unit itself.

In semi-indirect lighting, therefore, it is necessary for its successful application that the ceilings are made as light in colour as possible, also that they are plain surfaces, as free from obstruction as possible.

It is desirable to bear in mind subsequent deterioration of a ceiling with age, which naturally has a bearing on the maintenance of the efficiency of this system.

The system should not, of course, be applied to situations with roof lights, etc., otherwise a very heavy loss will result.

An important point, also, is the relation of the height of a building to the spacing of points with semi-indirect lighting.

As the light is reflected in a diffused manner from the ceiling, and depends upon the latter for its efficiency, it is obvious that the greater the height the lesser will be the quantity of light rays which ultimately reach the working surface.

I submit that the use of a ceiling as a reflector is unscientific and the result unbalanced, for the reason that attention can best be concentrated upon a given object when it is well illuminated and the surroundings are not made to predominate.

The latter point is accentuated in the case of totally indirect lighting, where the source appears as an opaque body.

Semi-indirect lighting came into prominence in the early days of the gas-filled lamp. The latter having a much higher intrinsic brilliancy than the former metal filament lamps, they required greater

diffusion. In many cases this was overcome by the wholesale application of opalescent bowls, but the inefficiency of this method immediately took away the benefits that should otherwise have been derived from the increased candle-power which these lamps made available.

On investigation it will be found that large numbers of semi-indirect lighting installations are being replaced by more efficient means, and in my opinion the solution rests in a return to units of a direct character, but offering a higher degree of diffusion.

Illuminating engineers have been working for some time now towards this ideal, and already several most promising new units have been made available.

It is, however, in such matters that illuminating engineers would welcome a closer co-operation with the architectural profession. We find, in so many cases where theory would indicate a satisfactory procedure, it is made impossible by æsthetic considerations. An example to my mind at the moment is in church lighting. There has been considerable activity of late in raising the standard of lighting in such buildings.

For the efficient treatment of such interiors illuminating engineers find immense advantage in placing their light units in the centre of arches, adopting chain suspension from the apices. By doing this the lighting of the nave and side aisles is practically shadowless. On this procedure, from the architect's point of view, there seem to be two lines of thought. In some cases we are left to our judgment, in others we find ourselves in a hornets' nest. I feel, therefore, that we should greatly benefit by the views of architects on such points.

Before passing on to a few lantern slides showing some practical applications of illuminating engineering, I would just like to mention that the present is an age of specialisation. It is impossible for an architect to be fully conversant with all the latest applications of lighting, nor is it necessary, seeing that any firm engaged in illuminating engineering would be only too happy to place before architects their experience, and assist in the drawing up of their lighting schemes, in most cases without obligation. It places no restrictions upon the architect—actually it might relieve him of considerable anxiety and trouble, in addition to which he has the certainty of good results.

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Discussion

THE PRESIDENT, MR. PAUL WATERHOUSE, M.A., IN THE CHAIR

Sir JOHN HERBERT PARSONS, F.R.C.S. (President of the Illuminating Engineering Society): Mr. President, ladies and gentlemen, I have great pleasure in moving a vote of thanks to Mr. Tye for his very illuminating paper. It has been full of good material, and it has been well illustrated. At the same time, much as it gives me pleasure to move this vote of thanks, I feel almost more inclined to move a vote of thanks, on behalf of the Illuminating Engineering Society, to the Royal Institute for devoting an evening to this subject, which is of great importance, not only to the illuminating engineer, but also to the architect.

I feel in a false position on this occasion, for although I am President of the Society of Illuminating Engineers, I am not an illuminating engineer; I am an ophthalmic surgeon, and, as such, I know very little about illuminating engineering, and very little about architecture. But I think perhaps my position enables me to visualise to some extent the attitude of the architect towards illuminating engineering, better than if I were simply an illuminating engineer. Speaking out of the fulness of my ignorance on both subjects, I think the traditions of architecture have been derived principally from the South and East: from Greece and Rome, and later from Italy. They are all countries where there is an excess of light, and the architecture of those countries seems designed to keep out the light. Judging by domestic architecture in England in past centuries, and also on the Continent, the principle of keeping out light seems to have been very admirably followed out, and it is only in comparatively recent times that the provision of light inside dwellings has been fully appreciated; there has been amongst architects, I presume, a new orientation of thought with regard to the problems of light interiors in domestic and other buildings in our climate. The attitude of the architect towards these problems, I take it, is that his subject is applied art, and that that of the illuminating engineer is applied science. There is great diversity of opinion with regard to the relative status of these two attitudes. My opinion is that applied art must also be applied science, and that they will eventually become one; because one of the criteria of the best art is fitness for the purpose for which it is designed. Therefore, there is a much nearer relationship between these two things than is usually felt at the present time.

In this re-orientation of the architects' attitude toward the lighting of building interiors there has arisen also the great new feature of artificial lighting, which has made such strides in recent times. The desirability of the co-operation of architects and illuminating engineers

seems to me to be a point which does not require any proof; it is an absolutely clear and simple thing. I feel that the illuminating engineers have rather pushed the matter into the purview of the architects. But the advantage which is to be obtained is not one-sided; it seems to me that the advantage of co-operation between architects and illuminating engineers would be as great, if not greater, from the point of view of the illuminating engineer. It is possible that if architects took more interest in the lighting fittings of the interiors of buildings, we might be spared some of the monstrosities which are at present to be seen, and we might less frequently find beautifully designed and proportioned buildings spoilt by hideous fittings. The question of lighting buildings seems to me essentially one which can be submitted to experimental investigation before the building is put up. The use of models and experimental rooms, like those which have been erected at the National Physical Laboratory, might possibly be of extreme utility to architects. I think the architect would score enormously if in his designing he would make the lighting part of his scheme in a way he has not always done in the past. Acting, as I did, on the Factory Lighting Committee of the Home Office, I learned much about lighting. One feature which came out was, that in illumination there are two great factors; one general, the other local, illumination. The matter of general illumination particularly is one which affects architects' designs in a very special sense. It is quite feasible that the lighting arrangements for general illumination, if they were designed by the architect in combination with the illuminating engineer, might be made to enhance the beauty of his design, and provide a light which would be satisfactory, and which I should be able to criticise at a later stage as being either hygienic or non-hygienic, as the case might be.

Mr. W. R. RAWLINGS (Past President of the Electrical Contractors' Association) in seconding the Resolution said: Sir John Parsons has spoken on so many of my points that my part in the programme is thereby considerably shortened. I do feel, however, that there is a still closer association wanted between the architect's fittings and the illuminating engineer's. The pictures we have had before us this evening illustrated rather too much of the engineering side of the question, and too little of the architectural. The architect puts up a beautiful building, he designs for the natural source of light with great care, and with beauty, and then he leaves the building for someone to come along, perhaps the electrical contractor or the illuminating engineer, and their only concern with regard to the building is

how best to light it. In the early days, I think, the architect used to study carefully the best fittings to suit the building. We have, in London and elsewhere, makers who give special study to the art of providing fittings suitable for a building. Where they so often fail is that the fittings give so little light. "But," they say, "after all, they are beautiful." When the lighting engineer comes along he says he cares nothing for beauty, but only for the science of lighting. What is wanted is a kind of combined brain, or brains, say, the lecturer to-night, Mr. Gaster, and the President of this Institution; and I think that if those gentlemen could work in combination we should have a different aspect in artificial illumination from that which we have to-day. Again, architects to-day have to design buildings to be used with artificial lighting. We have found, since illumination has developed, that improvements have taken place under streets; I think some of the most comfortable corners are now to be found in what used to be cellars under the street pavements, and that has been due entirely to improvements in artificial lighting in conjunction with architecture. Therefore, the architect, of necessity, must consider and reconsider the plans he used to prepare of old, in which the lighting was insufficient for either work or pleasure. I am aware that there are many difficulties in the way, due to antiquity and prejudice. Take the case of the billiard table: I do not think any illuminating engineer has ever succeeded in convincing a billiard player that it is only necessary to illuminate the table and shield the player's eyes from the light; the billiard player must have a shade 20 inches in diameter, it must have an angle which is the same for a gas burner, and it must be 27 inches from the table-cloth, and the lights must be spaced in the same sort of way, best known to the player. Do what you will, nothing will induce the billiard player to use anything but those peculiar green cardboard shades—covered with silk if you like, but they must be cardboard inside. That is typical of many cases where the user wants a particular form of light.

I am in accord with the lecturer when he says he does not agree with the whole of the light being derived from the ceiling; personally, I think it is a mistake. Direct illumination is right and proper, provided always the light is properly screened from the eyes.

It only remains for me to second, as I have much pleasure in doing, the vote of thanks to Mr. Tye for his paper this evening.

Mr. HURST SEAGER [*F.*]: The title of the paper is a fascinating one—"Illuminating Engineering in Relation to Architecture"—but I fear our lecturer has not lived up to his title. He has dwelt in his paper, in a most interesting way, it is true, only on the engineering aspect; his paper is notable for what he has left out, bearing in mind the title he has chosen. The artistic conception of lighting in reference to archi-

tecture has been omitted, for the only note on the lighting of a building in an artistic way is that in which he refers to the lighting of churches, where he hangs his lamp from the apex of the arch, and he says that on that account they sometimes find themselves in a hornets' nest. May I venture to hope they will be in a hornets' nest every time if they illuminate their churches in that way? What we want to do, as architects, is to work in co-operation with illuminating engineers to produce artistic effects; our requirements being known, we should be able implicitly to trust the illuminating engineer to carry them out.

I was glad to see that a beginning has been made in our Abbey by the use of concealed lighting in the chancel. I hope it will be carried further, for it is the glory of the whole interior we want to reveal by artistic illumination, but it must be illuminated in such a manner that it shall be an excellent example "of that art which concealeth art." Not the slightest proportion of those who visit Westminster see the glories of it, for they never look up. The glory of Westminster Abbey lies not at the floor level, not in the mass of monuments—these have an entirely different interest. It lies far above the level of the eye. We need to illuminate the Abbey in such a way that the eye would be drawn irresistibly upwards.

I do not want the mystery of the building to be destroyed. I would not rob it of that magnificent intermingling of gloom and splendour of hue which can be seen at any time that the sun is shining within it—and it does shine here sometimes! But if the Abbey were illuminated in this way it would be a revelation to Londoners—a joy to all visitors.

I was at Constantinople last year, and, under the charge of a Turkish soldier, spent many days in photographing Santa Sophia; and as I stood there I could not help thinking what a splendid thing it would be if it were lighted, as it should be, by rays of light thrown into the dome. Now, there are many lights on a level with the eye—primitive electric lamps, which only dazzle; and the beauty of the building disappears when these are lighted. The interior cannot be well seen in the daytime, because there are so many windows of clear glass in all directions; but with the possibility of lighting it by electricity all the glories of that beautiful building would be revealed. And so it might be in the interior of St. Paul's.

We know that light is thrown off from any illuminant equally in all directions, and if we had in the centre of the dome of St. Paul's a large shielded light, the surface of the dome would be evenly illuminated and a beautiful effect created.

Let me now take a sudden drop from the consideration of the lighting of these poetic examples down to shop windows. In all our principal streets one sees the great advance which has been made in the art of dress-

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ing shop windows, and here the electrical engineer has made them things of beauty at night. But he has omitted to notice that the masked lights, which our lecturer referred to, are seen by reflection in the glass partition which divides the shop from the window, in many cases quite destroying the effect he wished to gain, for this reflecting light is irritating. It could easily be made to disappear by slightly inclining the glass in the screen, or, better perhaps, by lowering a curtain over the glass at night. Daylight conditions need to be brought into harmony with the artificial lighting. At night the spectator stands in a comparatively dark space, and is looking into the brilliantly lighted window, but in the daytime these shop windows, which are so perfect at night, are, if dark goods are displayed, nothing but mirrors advertising often the details of the windows on the opposite side of the road. That could be altered by taking care that in the daytime also there should be a flood of light—natural light—sent into the back of the window by reflecting glass, or other means, so that in the daytime, as at night, the interior of the window should be a more brilliantly lighted space than that in which the spectator stands.

I must not enter in detail into the lighting of picture galleries, a subject which I have studied for many years; I hope a special evening will be devoted to it at some other time. But one thing I must mention, for it is urgent and might be repeated at any moment. The lighting engineer has been lately at work in our National Portrait Gallery. In one narrow gallery in which the pictures cannot be seen at all during the day electric lighting has been installed. Here was a glorious opportunity to make use of the electric light in such a way that the beauty of the pictures could be realised. But the engineer put along this narrow gallery eight such lamps as you have in this room, sending the flood of light down on the spectator. It is the most elementary principle in regard to gallery lighting that the spectator shall be in the shade and the lights shall be shielded. But here the spectator is brilliantly lighted and strongly reflected in every picture, and the whole of the lights are reflected over and over again in the most maddening way. It makes one almost despair of any advance being made when we find, after the scientific basis has been laid down, and the results of scientific experiments published, that illuminating engineers should have gone to this gallery and produced such a lamentable result.

I submit that what is required is that in any one branch of the work all workers should be brought into touch; at present, in this case, we have illuminating engineers studying the question and publishing the result in their journal, which the architects never see. The architects study it from their point of view and publish it in their journals, and the illuminating engineers never see it. We have also directors of museums

studying the question of lighting and publishing the results in their journal—which none of us see. All views thus expressed on any one subject should be noted, and some publication should give a full index to these various contributions, not only in the journals mentioned, but through all sources, so that each of us may reap the advantage of the studies made by all workers, and thus unitedly progress towards the goal we wish to reach.

Mr. L. GASTER (Hon. Secretary, Illuminating Engineering Society): At this late hour, sir, I must not detain you with many remarks, but I cannot help voicing the opinion of members of our Society, from the President downwards, that it is a great pleasure to have the opportunity of coming before this Institute and laying before you the plea that we like architects to come and help us.

When the Illuminating Engineers' Society was formed, in 1909, our constitution allowed equal representation on the Council to allied bodies, and there is one vacancy on our Council, and that is for an architect. I have written to the Royal Institute asking them to honour us by electing a representative for our Council, as the Electrical Engineers, the Gas Engineers, and the Ophthalmological Society have done. That invitation was not accepted on behalf of this Institute; they said they would send a representative when there was a subject which interested them. To-night that matter is no longer left in doubt, and we hope the vacant chair on the Council will be filled by your worthy President. It is only by the exchange of views that we can learn what is wanted, and, equally important, what is not wanted. What is required is a proper exchange of views between the user, the producer, the architect, and the ophthalmologist. To-night we are privileged to be here with you, and I am glad to be able to congratulate Mr. Tye on his excellent paper. I am not too young to teach, nor too old to learn, and I have come here to say one or two things which I should like to bring to your notice.

In 1910 it was my privilege to write an article on the lighting of drapers' shop windows. I was abused by every draper in the country, who said if I were a window-dresser I would know better. Any fool can sell what a person wants; the cleverness in salesmanship is in selling what a person does not want. What you want is to attract the probable buyer to the window. During the war there were air-raids, and the police said "No lights can be allowed." The reply was, "But I must carry on my business." "You can do it by keeping your light inside your window." Light the goods, do not have the light so that it plays on the eyes. Architects have paid great attention to shop windows in France. We have learned what the defects are, and it will be the object of the Illuminating Engineering Society to improve the lighting as time goes on. My next point is a very important one. In the olden times we looked upon

light as a desirable thing *per se*. But light is for the purpose of making other things visible. If you go to a picture gallery, it is the picture you want lighted, you do not want to see the light, nor its reflection. We want the architect to tell us exactly what it is he wishes to be made visible, then we will design the fittings accordingly; it is for you to co-operate with us in providing the right kind of light.

The PRESIDENT: I do not propose to add anything to this discussion, except this: that we architects are entirely favourable to the instruction which has been given to-night, and we are very thankful for it. If it ever turns out, in the conferences between architects, illuminating engineers and ophthalmologists that we do not appear to be entirely at one, it is partly because the architect realises that one of the functions of light is to produce shadow; that was once hinted at in the lecturer's most able address. It will be wise for us to find out, under the advice of our scientific helpers, how we can get the effective shade without loss of efficiency in lighting. And it is wise for us to know—though sometimes we are extravagant in the matter of light—it is wise for us to know what we are losing and how we lose it. At present we deal with light as if it were water; we do not realise the cost of it. Economy in fire and lighting is a subject on which the architect has much to learn, and it is because of that I welcome the lecture we have had to-night. It has furnished me with a good deal of knowledge I had not before, and I have pleasure in putting to you the vote of thanks.

Carried by acclamation.

Mr. TYE (in reply): I have to thank you for your kind reception of my paper. With regard to reflections from shop windows, this certainly is an objection, but in many cases it can be overcome by a light muslin curtain placed between the lighting units and the glass. In another case, light etched glass itself can be used, with the etching on the side nearest the plate-glass window; this has minimised the objection to some extent.

In the case of the National Portrait Gallery, I do not know whether illuminating engineers as a body have been unfairly dealt with in Mr. Seager's remarks, but it may easily be that illuminating engineers were not consulted at all. The state of things is that anyone, from the plumber upwards, is entitled to buy Osram lamps and instal them and to call himself an electrical contractor; and it is much the same with illuminating engineering. The latter is a comparatively new subject, and because of that it probably has not yet that wide application that you might associate with electrical contracting.

Mr. P. J. WALDRAM, Licentiate Member of Council of The Illuminating Engineering Society, has sent the following communication:

May it be permitted to one who has for many years been an ardent student of illumination, in all its aspects, to express regret at the extremely narrow view which the paper takes of that wide and interesting subject; which is, to architects especially, also an extremely important one.

It is, I suggest, most unfortunate that the author, instead of dealing with illumination, should have dealt exclusively with certain methods of obtaining it. Still more unfortunate is it that these methods should have been illustrated, I think exclusively, by the practice of one firm; as if one would illustrate the relation of wood-carving to architecture by describing the chisels used by one eminent craftsman.

The architect, as the responsible master-craftsman, is not so much concerned with tools, theoretical or practical, as with the result. He is concerned with illumination in its utilitarian, hygienic and æsthetic aspects. The minutiae of lighting he can leave to those whom he employs to give him such illumination as he specifies. He should, of course, be able to specify the intensity in foot-candles which he requires, and to measure that intensity. He is also concerned with its colour, direct and reflected, with its contrasts no less than with its uniformity, with the depth of its shadows, its freedom from glare and its effect upon that capricious and apparently unreasonable combination, the human eye and mind. He is concerned with its broad utilitarian aspects of first cost and running cost, and its suitability for the varying requirements of human industry; and he must not be unmindful of its hygienic aspect, glare or eye-strain being to him the result of bad craftsmanship, which he must not and will not have at any price.

Nor are his interests confined merely to artificial light, any more than they are restricted to any one form, such as filament or gas-filled lamps. Gas is a worthy rival of electricity, and rapid advances are being made in the use of daylight lamps, the light from which should possess all the main physical characteristics of daylight, and not merely the same spectrum, as was stated in explanation of one of the slides. We know of their adoption in drapers' shops and manufacturers' test rooms, but they are also coming into use elsewhere, in art schools, for instance. They may prove to involve less eye-strain, and become the standard artificial illuminant. Daylight itself, with the photometry of which I have been more particularly associated, is to the architect really a form of illumination, his windows being the lamps. He needs not only data of the hours of sunlight to be expected to enter any window, but of the light from that window on dull or wet days, and over or beside obstructions. The photometer will tell him what he has got when the buildings are completed. It will not tell him what he is going to get.

ILLUMINATING ENGINEERING

It may be said that in the foregoing there is sufficient to occupy several evenings, and that the author was wise to limit his scope. Possibly that is so; but on the other hand, a Paper that might convey the impression that the art and science of illumination—for it is both—can consist of a few elementary formulæ and some tools, means even more than a lost opportunity of securing the sympathetic co-operation of architects; it gives an unfair start to an utterly false impression.

Much data on the subjects which I have indicated is of comparatively recent growth—much more awaits research; and it is hoped that architects will in increasing numbers avail themselves of the labours of members of the Illuminating Engineering Society and will assist in those labours. That Society is by no means composed entirely of engineers: some of its members are scientists or physicists; some, like its president, are ophthalmic surgeons; others are architects. The Society studies broad results and the best means of obtaining them. It collates information from all over the world. It welcomes new methods and tools, but it also criticises them very freely.

In many ways it might assist architects by indicating the extent of knowledge which exists at any time with respect to any given problem, such as daylight lamps, the natural and artificial lighting of hospitals, cinemas, churches, factories, etc., in order that the architect may ascertain whether reliable data exist which he can use, or, if he must rely wholly on his own judgment, whether any boundaries have been set to the problem, so that his labour may be minimised.

The illuminating engineer can help him, but that is all. If he tries to abrogate to himself the position of the architect, the latter will inevitably fall back upon rule of thumb and common sense, and do the best he can by himself. And it will not be a very bad best either; for by the time that a man of trained observation is satisfied (and there will be no final payment until he is) there will not be very much to grumble at.

His methods of predetermining results may seem rather crude and elementary to the engineer, and he may make mistakes; but the very crudity and simplicity of his mental deductions will probably protect him from any very glaring mistakes. The very slowness of trial and error methods may be his salvation, whereas the rapidity of more scientific methods applied to a new and partially explored subject may easily invite disaster. Unfortunately, when an illuminating engineer makes a mistake, it is almost bound to be a "glaring" one, in some directions at least, and generally in all.

Scientific methods of calculation must necessarily depend for their accuracy upon accurate data, and wise illuminating engineers recognise, of course, that we are greatly in need of more and better data, if only to correct figures which were hurried prematurely into print in the early days, and have been copied and quoted wholesale.

Take, for example, the familiar American table of artificial illuminations which, as the paper states, appears in the catalogues, though not, I believe, in the practice of many firms. I have often wondered whatever could have induced its compiler to recommend so many values which are so greatly in excess of what people need, or even of what they could endure. Too much artificial illumination can be far worse than too little, for our eyes are only accustomed to take in very moderate intensities of light. The illuminations of daylight are enormous, and they vary enormously, but the iris diaphragm of the eye stops them all down to a small amount, probably two or three foot-candles. Unfortunately, the iris diaphragm does not work properly under artificial light, and we only need high illuminations such as 4 to 10 foot-candles when viewing substances or fabrics which reflect only a small proportion of the light falling on them—dark cloths, for instance. Objects are not seen by the light thrown on to them, but by that which they reflect back into the eye.

If the 5 foot-candles recommended were adopted in elementary school classrooms, where slightly glazed paper was in use, the school medical officer would have his hands full.

The Committee of the Society of Illuminating Engineers, which investigated school lighting very exhaustively some years ago, restricted its recommendations to a minimum of 2 foot-candles, and even in America a minimum of 2½ foot-candles is now suggested.

General offices with the 5 foot-candles recommended may exist, but I have not yet discovered them, whereas rooms with half that quantity seem excellent. Ask a draughtsman to work on tracing cloth under an illumination of 5 to 10 foot-candles as recommended; he will immediately tie a handkerchief round the bulb or rig up a translucent paper screen.

The most recent recommendations of the Home Office Committee on Factory Lighting are 3 foot-candles for fine work and 5 foot-candles for very fine work. The list in the paper recommends 5 to 10 for fine work.

I would venture to suggest that before embodying in a specification any value from this table an architect should compare it with some installation of known intensity; or, better still, find one which pleases him and measure it with his own photometer.

Architects and scientists are both aiming at the same goal—viz., illumination which shall satisfy the human eye. In this the trained judgment of architects should be invaluable, especially if they would acquire the habit of using photometers for recording the intensities which satisfy their trained judgment, recognising and noting contrasting surroundings which might tend to affect or prejudice the result. But before they can do this there must be cheaper and simpler photometers.

The R.I.B.A. War Memorial

UNVEILING CEREMONY BY LORD CRAWFORD.

On Monday the 20th, at 3 p.m., the Earl of Crawford and Balcarres [*Hon. Fellow*] unveiled the War Memorial Tablet, containing the names of 232 members and students of the Institute who laid down their lives during the Great War. The memorial, a bronze tablet on which are inscribed the names of the fallen soldiers, is attached to the wall to the right of the entrance to the Institute galleries.

Lord Crawford was received by the President, Mr. Paul Waterhouse, the Past-President, Mr. John W. Simpson (who was the Assessor in the competition for the War Memorial), the Vice-Presidents and the Hon. Secretary of the Institute.

Mr. John W. Simpson (the Assessor of the Competition) presented to Lord Crawford Sir Trenwith Wills, the designer of the memorial, who was successful in the competition restricted to members of the Institute who served in the war.

Lord CRAWFORD in his address said :—

GENTLEMEN,—We commemorate our brother-architects whose paths had seemed to lie in peace, whose work was destined to be wrought in harmony until they heard the great rending cry—

“ Quiet, untroubled soul, awake, awake !

Arm, fight and conquer, for fair England's sake ! ”

Hearing, they answered ; and, answering, they gave their lives.

Two hundred and thirty Fellows, Associates and Students of the Royal Institute were killed. Here is the list of their honoured names—no mere census-sheet, but a Roll of Honour which records achievement—the same act of sacrifice accomplished by every one of them, but each in its different way, and each with the grandeur of personality in its suffering and abnegation.

On these occasions we are perhaps too liable to assess the equilibrium of sorrow, too ready to dwell upon the pathos of young life abruptly cut short. What secrets lie unrevealed in these tragic columns, what hopes and aspirations unfulfilled, alas ! what poignant grief in the circles of family and home. Gone they are ; dead we must reckon them to be ; but though dead we must not look upon them as absent since they still speak to those who survive, and will ever recall that without their agency all that we value as individuals, all that is most precious to

our citizenship, all indeed which gives us the freedom of ourselves and of our country, would have been overwhelmed in disaster.

So let us take comfort, since glory is never without its measure of happiness. And who shall say that they missed their chosen career ? They were indeed great architects who built up the stalwart bulwarks of our Empire's defence with the very body of their death. Their creative genius has realised a fuller expression in that their earthly ideals have been translated into terms of spiritual reality, whose souls and sacrifices form even now a part of the great Temple not made with hands.

Nevertheless our mourning should not be concealed. We shall never know the real extent of our loss ; but if, as we hope, there are to-day the stirrings of a renaissance in the noblest of arts, if with the coming generation we are to witness the fruits of long and patient enterprise, of growing and more discerning appreciation, of the improved organisation and equipment on which such earnest effort is being expended—we must weep for much young talent that has been dispersed, lamenting that so many who were born to observe order and comeliness should have saved them for us at the cost of their lives.

Let us be thankful that so many of their comrades were spared. One thousand civilians issued from the peaceable calling of the architectural world, ready to die like the rest of them as soldiers ; these are with us to-day. Their names do not appear on the altar stone of the Royal Institute. Upon them must fall the burden of carrying on the traditions of British Art, of maintaining the high standard of public spirit and duty : above all they will hand on to their successors the names of those whose hard lot they were ready to share. They will honour those who died, those for whom the thirst for Truth and Beauty (the artist's ceaseless quest) must at length have found its satisfaction at the very source of Beauty and Truth, where Eternity affirms the conception of an hour !

Four long years have now passed since upon the high and perilous peaks of victory, our Brothers laid the foundations of peace. We have still to erect that vast structure through Toil and Tempest, and through Time. With undiminished faithfulness,

THE R.I.B.A. WAR MEMORIAL

with hearts which no tribulation can wear down, and which no discouragement shall turn aside, let us go forward and build.

To their victorious memory I have the honour with deep reverence to unveil this memorial.

After the tablet had been unveiled. The Rector of St. George's, Hanover Square (the Rev. Prebendary F. N. Thicknesse) read the dedication prayers.

The PRESIDENT, in moving a vote of thanks to Lord Crawford, said :—

The claim that the poets have upon mankind is twofold—represents a double debt. First—that they seize, and render into words, thoughts that would otherwise go unexpressed ; and, further, that they crystallise as thoughts vague aspirations and unformed regrets or shapeless, unsubstantial wonderings, thus—by creative contact with ourselves—making a mental treasure-house of what, unhelped by them, were chaos of the mind.

Lord Crawford, in his words to us to-day, has been *our* poet. He has framed in speech—beautiful speech—many unspoken thoughts which, even if spoken by us, certainly could not have reached *his* level of utterance.

Nay more. As a true poet he has left thoughts rising in our hearts—uplifting thoughts—which, if they are our own, are none the less born of the inspiration of his words.

In thanking him for this we thank him also in that this bronze (itself a message bearer) will to the eyes and memories of those who have been here with us this afternoon, speak, when they look on it from day to day, not merely with the voice of reverent and ever affectionate homage to the Dead, but also with an echo of the words spoken so helpfully by him to-day.

Lord Crawford—in the name of architects who mourn the loss of comrades, brothers, sons : and in the name of parents and of those, whoever they may be, who standing here see on this panel the name of one of those who

“ added love to love by severing

In Love's own name some dearest tie of love,”

I thank you ; and the thanks spring from the heart.

The PRESIDENT also expressed the thanks of the Institute to Prebendary Thicknesse.

Mr. ARTHUR KEEN, in seconding the vote of thanks, said :—

Mr. Waterhouse has expressed himself so happily in speaking of our indebtedness to Canon Thicknesse and Lord Crawford that little remains to be added by me. There is a sense of fitness in Canon Thicknesse dedicating our memorial, for his brother was one of our members and one whom we valued very highly.

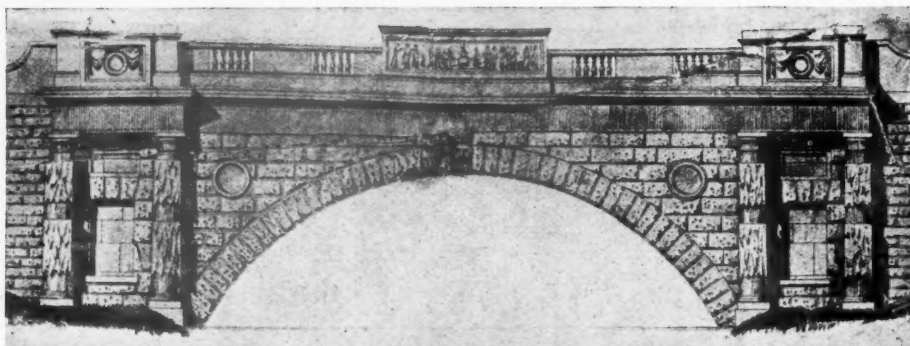
Lord Crawford has at all times been most willing, and ready, to help us in any way that lay in his power : most ready to prove his interest in our affairs by associating himself personally with our undertakings. Not the least of his services has been rendered by him this afternoon in taking part in our effort to acknowledge the debt that we owe, and can never pay, to the men whose names appear on this tablet. If I judge him rightly, he wants no formal thanks for it : he is one of ourselves ; the men who are gone were his fellow members ; he shares in the sense of loss, the feeling of sorrow that moves us all, and he enjoys with us all the security from danger, the freedom won for us all by the efforts and the sacrifice of these men and many, many another like them—so many indeed that one can hardly bear to think that sacrifice and loss and sorrow should be so widespread.

We could think of no one having sincerer sympathy with us than Lord Crawford to perform this service for us, and we are indebted to him for doing it. I endorse all that the President has said about him and I ask you to join me in that endorsement.

Amongst those present were :—

Messrs. A. W. S. Cross, C. H. Heathcote, H. D. Searles-Wood (Vice-Presidents) ; Messrs. R. J. Allison [F.], C. M. Armstrong [F.], W. E. A. Brown [F.], A. Bullock [A.], Max Clarke [F.], Heaton Comyn [F.], W. Vernon Crompton [F.], Horace Cubitt [A.], T. Lawrence Dale [F.], T. Raffles Davison [Hon. Associate], H. P. Burke Downing [F.], E. H. M. Ebbs [A.], J. Alfred Gotch [F.], W. Curtis Green [F.], L. A. Hayes [A.], E. Stanley Hall [F.], W. J. H. Leverton [Licentiate], Henry Lovegrove [A.], A. G. R. Mackenzie [F.], Alexander N. Pater-son [F.], W. A. Pite [F.], W. T. Plume [Hon. Associate], Halsey Ricardo [F.], W. Gillbee Scott [F.], Edward Warren [F.], W. E. Watson [F.], Frank Woodward [A.], etc.





ORIGINAL DRAWING OF BRIDGE BY ROBERT ADAM, FOUND AT OSTERLEY

The Work of Robert and James Adam*

By STANLEY C. RAMSEY [F.].

AFTER a perusal of these sumptuous volumes one is left with the feeling that there is nothing more to be said about the Adam Brothers. Mr. Bolton has dealt so fully with his subject that we feel we know everything there is to be known about the Adams, their lives, the lives of their clients, and even, in some cases, of their clients' friends. Without in any way attempting to depreciate Mr. Bolton's magnificent achievement it might be gently suggested that this exhaustive method of treating his subject has, in certain cases, carried him a little too far. To give an instance, it was perhaps a little unnecessary because Robert Adam once designed a house for Mrs. Fitzherbert at Brighton, and because Mrs. Fitzherbert afterwards lived at Marble Hill, Twickenham, which was built in 1723, to give a history of this building. But, apart from this little grumble, there can be nothing but praise for the production, and Mr. Bolton and his publishers are to be sincerely congratulated on the result of their efforts.

Robert Adam occupies a unique position in the history of British Architects, he was probably, all things considered, the most original of all our great builders, at once one of the most satisfying and disappointing of artists.

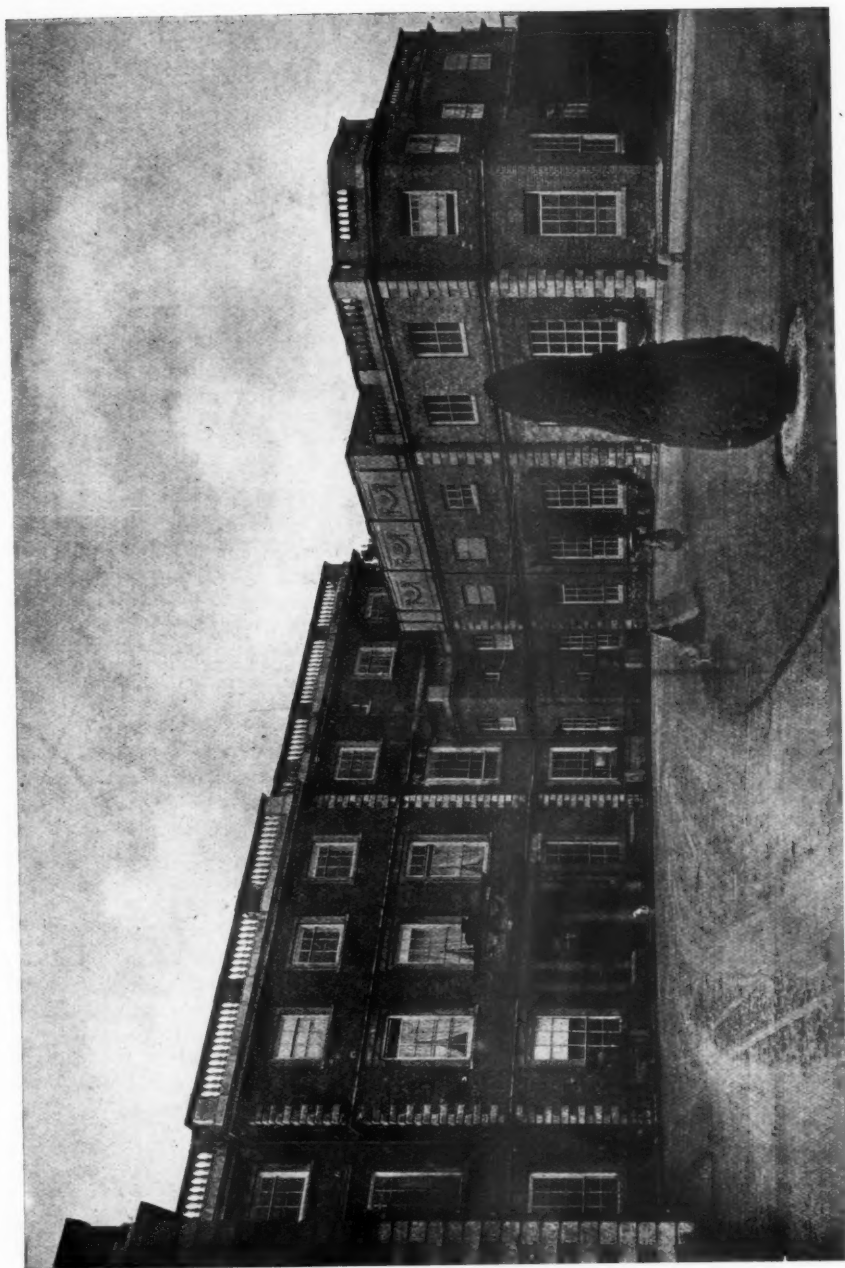
Mr. Bolton tells us that it was one of the minor tragedies of Robert Adam's life that he never erected a great building, but this frustration of his ambitions

may well have been a blessing in disguise. For Robert Adam was essentially a domestic architect, he was at his happiest in the setting of the stage (in that series of wonderful and beautiful houses which he built) for the brilliant life of the late 18th century. The words "An Adam House," come trippingly from the lips and so aptly describe the peculiar impress Adam gave to his work, that we use the personal description as regards his houses, as distinctive from the domestic work of all other men. We do not speak of a "Wren House," or an "Inigo Jones House" in the same sense; we rather use the words, a "house by Inigo Jones," or a "house by Sir Christopher Wren," and this instinctive difference in wording is not without significance. Possibly the very qualities that made Adam's work so good in his domestic essays, mitigated against his chances of success with more ambitious projects. He was probably at his best in his smaller houses, in some detail such as the ceiling at No. 3 Adelphi, or in some door or fireplace, which he probably himself regarded as of very second-rate importance. In some of these slighter works he seems to embody the very spirit of perfection—there is not a redundant moulding in the whole composition, not a line that can be added or taken away.

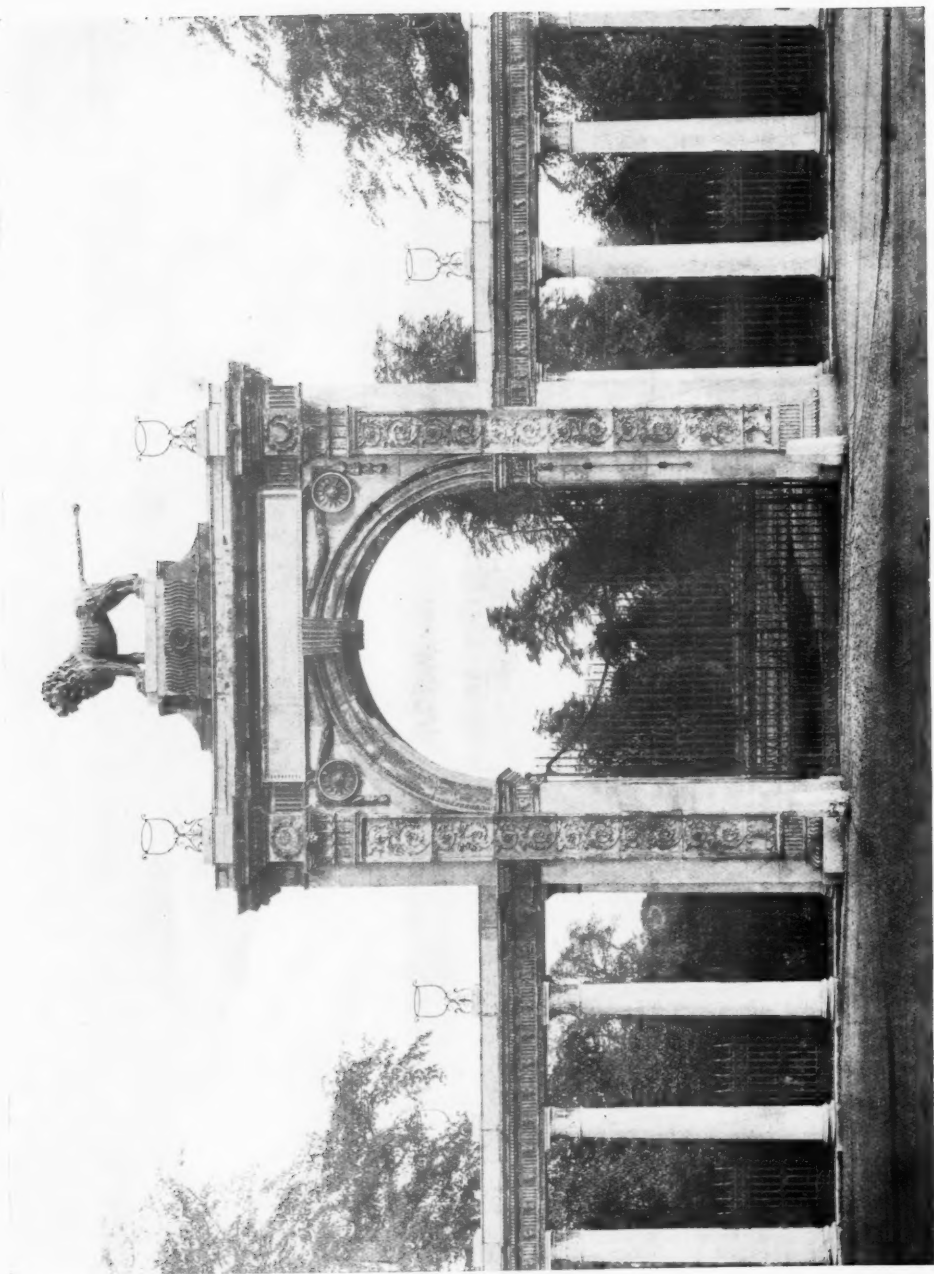
In some of his earlier designs he is inclined to be a little archaeological, and in his later work to be rather too impressive—at times he almost wearies us with so much brilliancy. We become tired of those contrasting surfaces of plain walls and elaborated ceilings, in which every inch is covered with moulded plasterwork, of those continuous arabesques, which cover pilaster after pilaster, and we are inclined at such moments to believe that Adam

* *The Architecture of Robert and James Adam (1758-1794)*, By Arthur T. Bolton, F.S.A., F.R.I.B.A., Curator of the Sir John Soane Museum. 2 Vols. [Published at the offices of *Country Life*.]

** The Editor desires to express his grateful acknowledgments to the Proprietors of *Country Life* for permission to use the illustrations in the present article.



NEWBY HALL : THE ENTRANCE FRONT. THE MAIN BUILDING BY WREN, WITH ADAM ADDITIONS AND PORCH



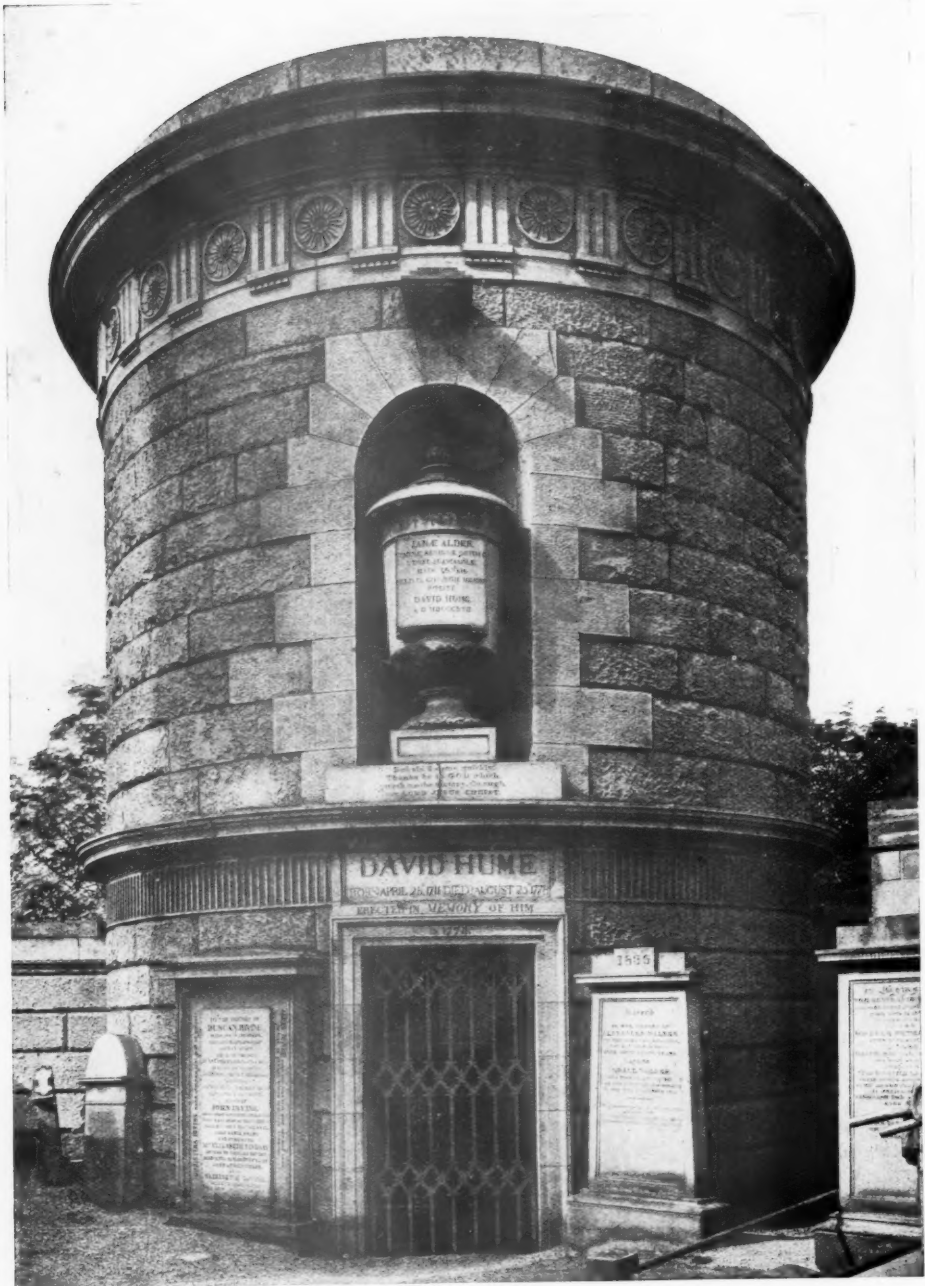
SYON HOUSE : THE ENTRANCE GATEWAY AND SCREEN



ORIGINAL SKETCH DESIGN BY ROBERT ADAM



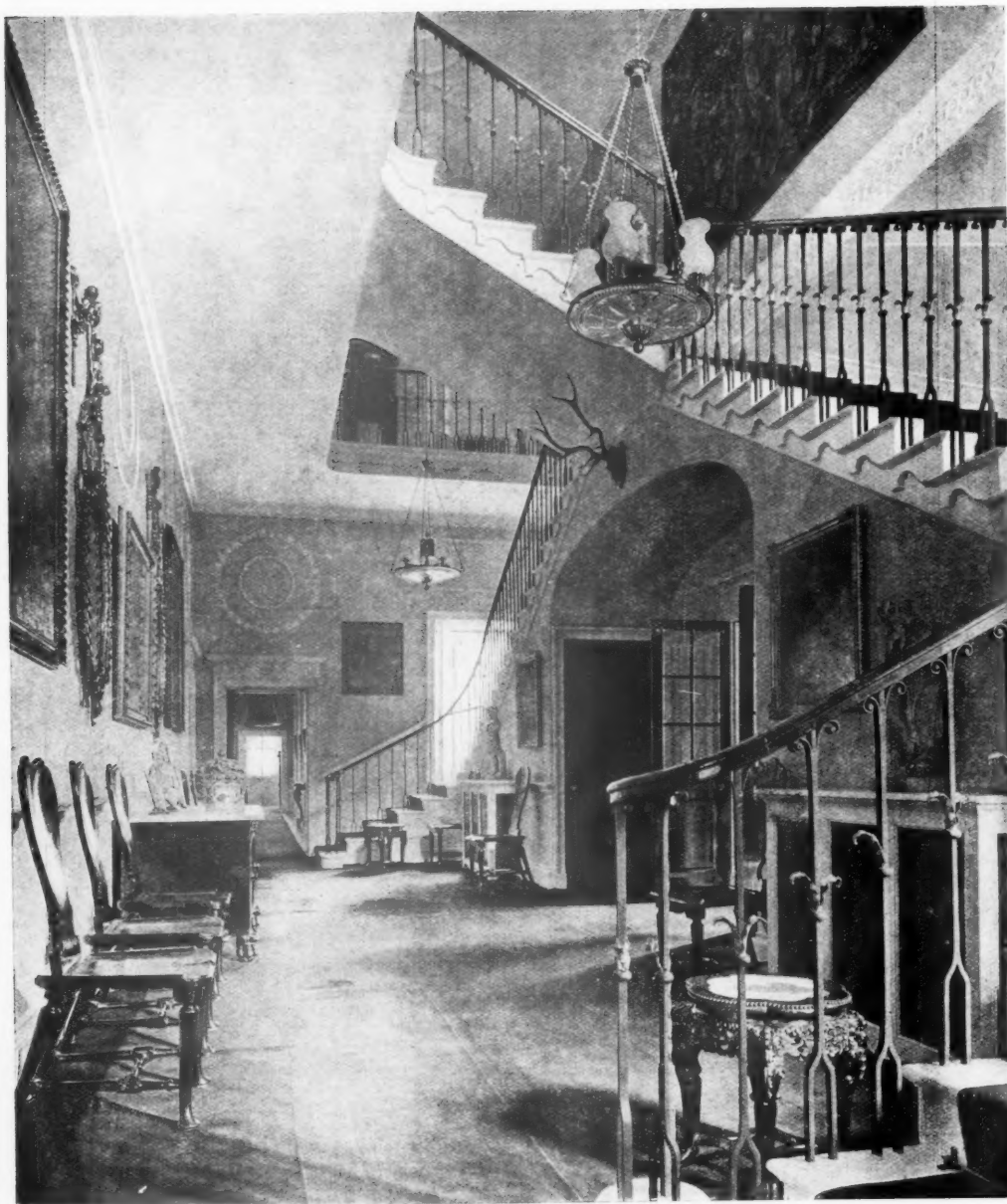
BRASTED: THE PORTICO ON THE GARDEN FRONT. ROOF ALTERED



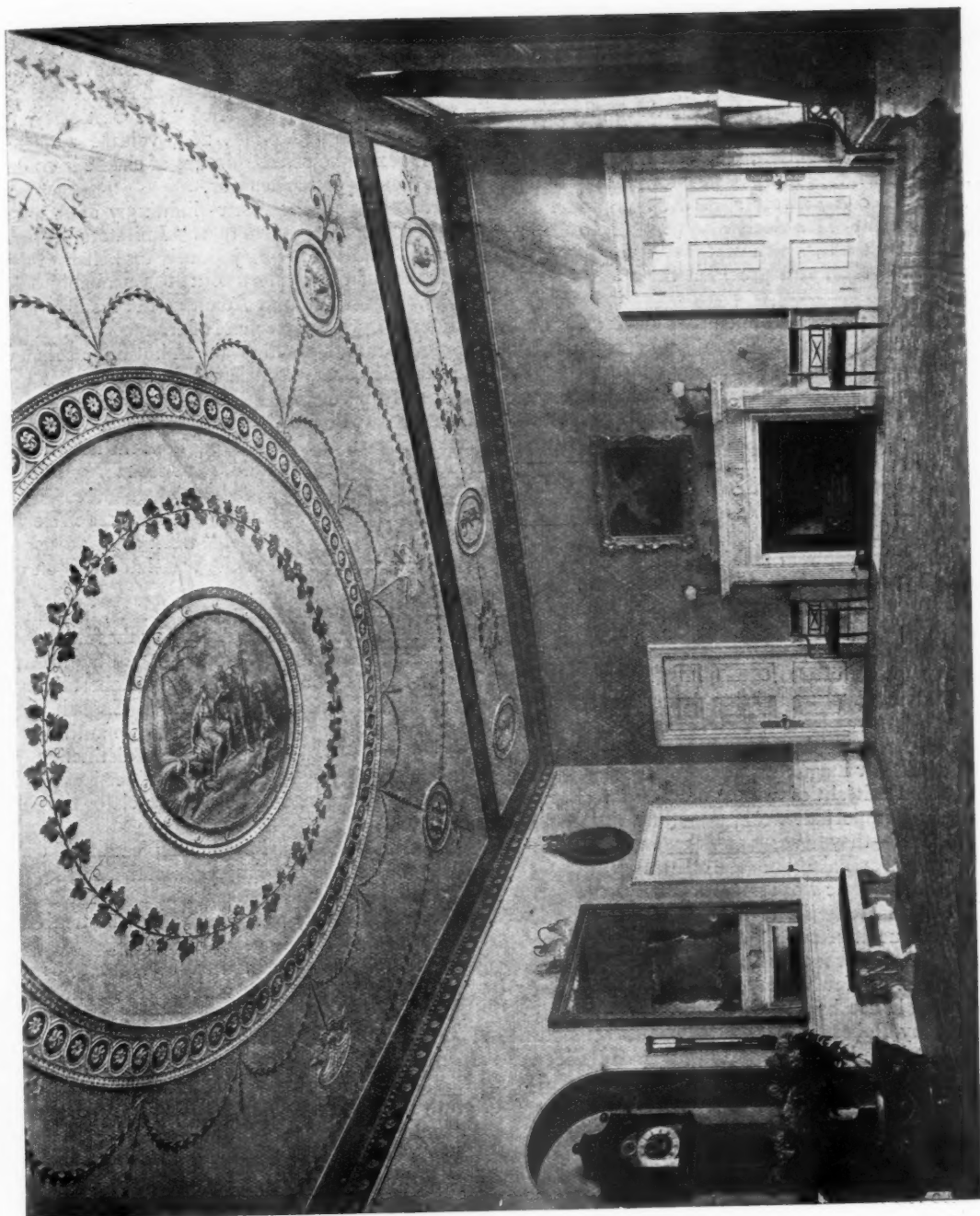
DAVID HUME'S TOMB



CHANDOS HOUSE : THE HALL



MELLERSTAIN : THE STAIRCASE HALL



KENWOOD, HAMPSTEAD : THE ENTRANCE HALL

—as his detracting critics would say—was nothing more than a mere decorator—then the next minute we have turned another page, and a pure gem of architectural beauty is disclosed matchless, flawless, incomparable! When all his great country mansions have been forgotten, when all his wonderful “French” furniture has passed into the museums, we shall still come across some humble and forgotten fragment of his work in some mean street or quiet country town, which in its serene and triumphant beauty shall still proclaim the spirit of the master.

Of Adam’s public buildings, we have only the Register House, Edinburgh, and some fragment of the University in the same city, by which to judge him. The Register House is, when all allowances have been made, somewhat of a disappointment. It is, for all its pretensions, with its irritating little turrets, too domestic in character for its purpose; it conveys the effect of a country mansion trying to pass itself off as a building of institutional and civic importance. The entrance to the University is finer in scale and conception, and if Adam had had the opportunity of completing this scheme he might have given us a public building worthy to rank with the best work of say, either Chambers or Gandon. But this was not to be, and we can only judge Adam from his executed works.

Mr. Bolton claims that his hero’s masterpiece was the interior of Syon House, Twickenham. Certainly a great performance, but these impressive suites of rooms with their magnificent decoration, free from the brilliant trivialities which detracted from so much of his important work, are still a little cold and inhuman—they have neither the great scale of a French or Italian Palace, nor the charming intimacy of the best domestic work in this country. Adam’s work at Syon House is, to use a detestable word, much in vogue at present, “scholarly.”

One of the most interesting of the houses illustrated is that of Newby Hall, which affords an example of a house by Sir Christopher Wren with additions by Robert Adam. The result is better than might have been anticipated by the admirers of either architect. Wren’s building simple and sane, the detail a little slurred and slovenly, very English in its breadth and dignity, is enhanced and set off by the later architects’ no less English, but more refined additions. The work of each acts as an admirable foil and contrast to the other’s, and the result is extremely interesting to the critic.

Robert Adam, like his contemporaries, came under the influence of the romantic movement of the late eighteenth century, and made various essays in what he was pleased to term “the Castle Style.” Culzean, illustrated on p. 268, volume 2, is an amusing example of the mixture of classic interiors with a pseudo-gothic exterior.

Mr. Bolton speaks rather slightly of Adam’s disciples, whom he refers to as “Imitators”—perhaps as a result of loving jealousy on behalf of the reputation of the master. But it is probably only when we realise Robert Adam as the inspirer and founder of a great new school of architecture that we appreciate him at his highest. In both this country and America, Robert Adam was the greatest influence that permeated the domestic architecture of the latter part of the eighteenth century. There is scarcely a town or village throughout the length and breadth of England that does not contain buildings reflecting his influence, and he might with reason be hailed as the Father of American Domestic Architecture. For the “Colonial” work of our cousins across the Atlantic is but the translated edition of Adam’s work in England.

The reputation of many great artists, including Michael Angelo, has suffered sadly by the follies and incompetencies of their followers—“imitators” in the worst sense—but the memory of Robert Adam is enshrined in the works of these English and American Buildings, and if none of the authors of these works attained the eminence or distinction of their leader, they, nevertheless, produced work of the first importance, and have every claim to rank as great artists.

One of the most striking and pleasant of discoveries to be made in going through these volumes is the number of the smaller works executed by Robert and his brothers. David Hume’s tomb at Edinburgh, the small house at Brasted, Sevenoaks, garden temples, orange houses, etc., far too numerous to mention, charm with the freshness of a new discovery; whilst the records of the many stately houses are set out authoritatively and in detail, enhanced by a most wonderful series of plates. Indeed, the whole profession lies under a great debt of gratitude to Mr. Bolton for his painstaking research and brilliant exposition—the result being two of the most fascinating volumes that the architectural press has produced for a long time.

Smoke and Noxious Vapours Abatement

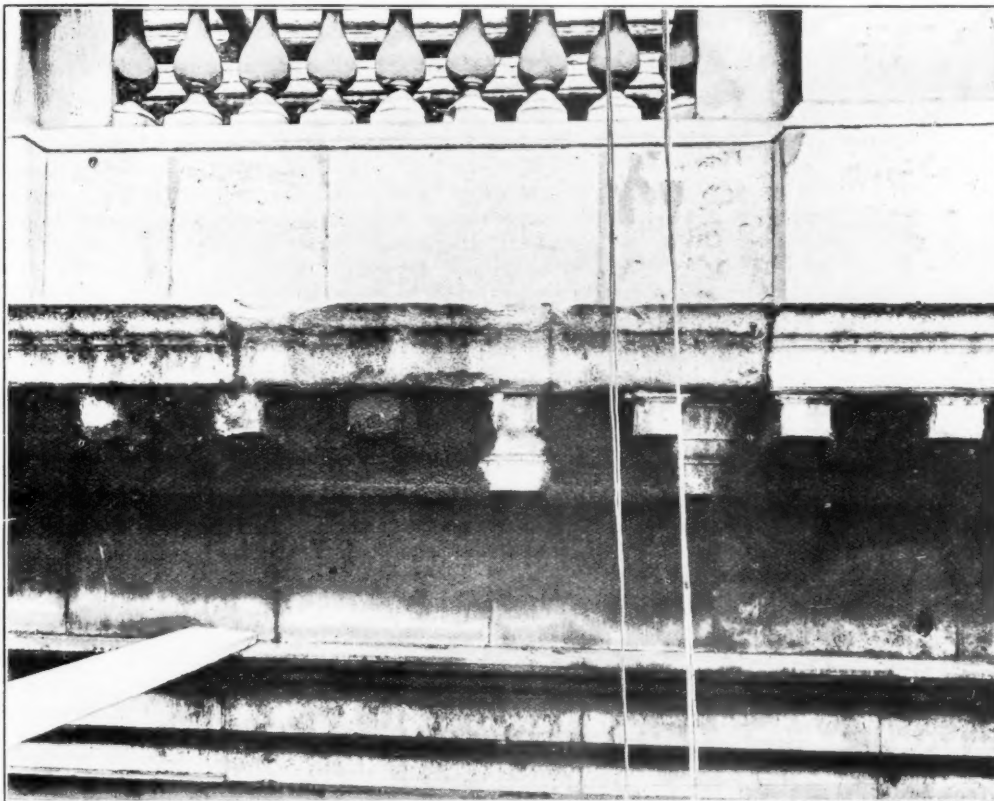
The late Dr. Murray, of Dictionary fame, used to say "a man ought to know everything about something and something about everything." This seems to be particularly applicable to architects, for whom more than for most men nothing of human interest ever can be alien.

That is why the recently published report on Smoke and Noxious Vapours should not be overlooked by us, although at first sight it is a far cry from the smoke nuisance to Beaux-Arts methods of design, for instance.

The Committee appointed to consider the question, in view of the housing activities of the Government, very wisely issued an interim report in June 1920, in order that the evidence they had secured might be

available for the Housing Authorities, and as a result they "emphasise the fact that the present housing situation affords a unique opportunity for constructive reform with regard to the heating, cooking and hot water supply arrangements in domestic buildings," and they "urge strongly that those who are engaged in the preparation of new housing schemes should use the means which are available and practicable for cooking and heating water and warming rooms with little or no smoke," such action being considered desirable, even if some small increase in expenditure were involved.

The main report issued in December 1921 is more drastic, as the Committee recommend that the Central Housing Authority should go so far as to decline to sanction schemes unless special provision is made for the adoption of smokeless methods, and that all industries should use the best practicable means for preventing atmospheric pollution: and to aid the good work they recommend that the law should be made



SOMERSET HOUSE (QUADRANGLE). PORTLAND STONE CORNICE, SHOWING DECAY AND SOOTY INCRUSTATION

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more stringent, and if local authorities continue to fail in their duty the Ministry of Health should have power to enforce the law over their heads.

They consider that the chief factor in the failure to deal with the smoke evil has been the inaction of the Local and Central Authorities. This inaction is likely to continue if the general public exercise no more discrimination in the future than in the past in their adverse criticism of Government control over national questions.

One fact—so commonplace that it is in danger of neglect—is made clear in the report, namely, that it is by no means essential to the well-being of the low-grade civilisation in which we live, even from the commercial standard of profit and loss, that our buildings, upon the detail of which architects have doubtless spent hours of labour, should be ruined by a smoke-polluted atmosphere (see the appended illustrations from Somerset House and the Houses of Parliament).

Before 1912 Pittsburg, U.S.A., was so cursed by smoke that the public revolted and brought pressure to bear upon the manufacturers, who said, quite naturally, that the existing smoke was necessary for their activities and prosperity; but experiments were made, and in the long run the manufacturers came to the conclusion that the imperfect burning of their coal was a waste which might be saved with benefit to their pockets: as a result Pittsburg is now relatively smokeless.

The same may be said of Dusseldorf, Cologne and other industrial towns throughout Westphalia and the Rhineland. There is probably considerable truth in what Dr. Saleeby said in a recent lecture to the London Society, that nothing remains on earth like the pollution of our industrial cities.

The evidence and the report are worth more attention from architects and the public than they are likely to get.

W. E. VERNON CROMPTON [F.].



HOUSES OF PARLIAMENT (CLOISTERS). CAEN STONE PLINTH, SHOWING EXFOLIATION AND SERIOUS DECAY

REVIEW

Review

REINFORCED CONCRETE: *A practical handbook for use in design and construction.* By R. J. Harrington-Hudson. London: Chapman and Hall, Ltd.

The fact that this work appears under the aegis of Mr. Fiander Etchells is, in itself, an assurance that the book deserves attention as a serious contribution to the literature—already by no means inconsiderable—which deals with the subject of reinforced concrete. Moreover, a hurried glance over the pages of the book produces a favourable impression: the distinct and elegant printing, the well-drawn and clearly reproduced illustrations betoken a care and thoroughness as regards externals which arouse confidence that the subject matter will also be found to be carefully compiled and thoughtfully expressed.

The book is divided into three parts: Part I., entitled "Materials and Construction," deals with the component materials properly speaking, centering and placing of reinforcement. Part II., on the subject of "Design," after treating of weights and stresses, takes up successively beams and slabs, tee-beams and pillars, passing on to a completely worked out example of the calculations for one storey of an office building, and closes with a chapter on specifications, regulations and notation. Part III. introduces the subject of "Monolithic Design," which is further developed in three out of the six appendices which close the book. The author expresses his hope to be able to publish a further treatise on the important subject of monolithic design, but in the present volume attention is confined to the interaction of beams and pillars in one or more spans and on one or more storeys.

Appendix I. consists of "Brief Notes on Simple Applications of the Calculus," but assumes some knowledge of the calculus on the part of the reader. Appendix VI. treats of the graphic computation of bending moments and shearing forces in continuous beams, the method adopted being that first published for the English reader by Mr. William Dunn in his *Lectures on Reinforced Concrete*. (London: University Press, 1911.) No proof or explanation of its theoretical basis is given; but this might have been an unnecessary, though interesting, encumbrance in a book of this kind. It may, perhaps, be permissible and of interest to remark here that a theoretical explanation of this method was published in the *Journal* of the Royal Institute of British Architects for March 1918.

The book presents very little opportunity for fault-finding, and should prove a very useful and complete guide and companion to those occupied in reinforced concrete work as applied to buildings—the word "buildings" being used here to mean offices, ware-

houses and similar constructions to the exclusion of bridges, piles, silos, water towers, sewers and other works of a more purely engineering interest which offer such peculiar opportunities for the use and development of this form of construction, and which have filled so much space in other works on the subject. This limiting of the scope of the book seems in every way an advantage. The author has been able to produce a work of reasonable size and cost, dealing thoroughly with all that concerns the reinforced concrete frame building; to include with the same thoroughness and completeness all types of construction for which reinforced concrete is used would have involved an unwieldy and expensive work.

JOHN H. MARKHAM [A.].

Correspondence

LONDON AND PARIS.

Torquay,
17 November.

To the Editor, JOURNAL R.I.B.A.,—

SIR,—I read in the last issue of the JOURNAL, with something of bewilderment, the remark in the President's address, that "Paris is a large—a very large—country town. London, however much you were to reduce its size, could never be a country town. It does not differ in degree, but in kind."

My own impression about the two cities has always been exactly the reverse. It is the business of a capital city to be stately, and Paris is stately. Her main avenues and buildings are laid out with that attention to the axiality which is a necessary element in stateliness of effect. London is in many places picturesque, but nowhere stately, and axiality is never considered at all. London seems to me, in this respect, to have the characteristics of an enormous village, where everything is haphazard. Paris is designed as a capital city.

H. HEATHCOTE STATHAM [F.].

THE LIGHTING OF PICTURE GALLERIES AND MUSEUMS.

New Zealand House,
415 Strand, W.C.2,
17 November 1922.

To the Editor, JOURNAL R.I.B.A.,—

DEAR SIR,—I forward herewith the Section of the Lady Lever Art Gallery referred to by the architects, Messrs. William and Segar Owen in your last issue, as having been designed in 1913. It was kindly given me by them for publication when I visited the Gallery about eighteen months ago.

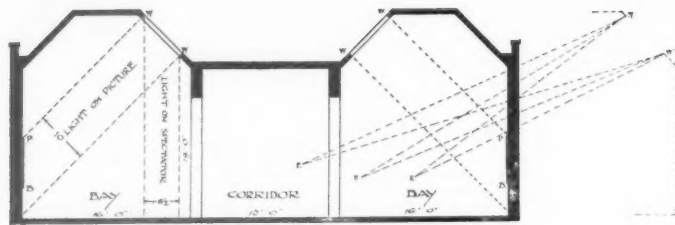
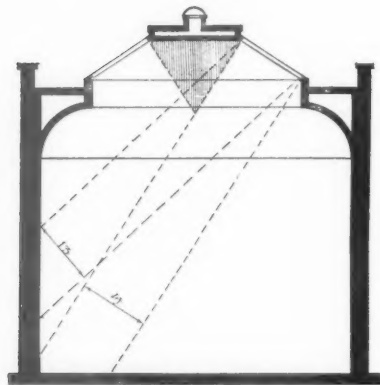
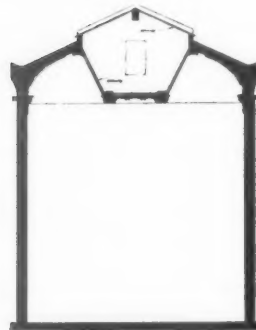


FIG 7 CROSS SECTION
DIAGRAM TOP SIDE LIGHTED GALLERIES



SECTION OF NEW GALLERY DULWICH
SHOWING STRONGEST LIGHT ON FLOOR



WIDTH 22 FEET.

THE LADY LEVER ART GALLERY, PORT SUNLIGHT.
MESSRS. W. & SEGAR OWEN, ARCHITECTS.

PICTURE GALLERY LIGHTING

It would, under the circumstances, be ungracious to criticise the design, but I would ask you to be good enough to reproduce beside it the Section of my Top-Side-Lighted Method published in our JOURNAL in 1912, and also the Section of the new roof of the Dulwich Art Gallery from the same source. See figs. p. 58.

Those who have studied the essential principles of the Top-Side-Lighted Method will at once see the reason for the expression of the hope in my last letter "that we shall soon see constructed on this side of the world an example *closely* following the lines laid down," and will be able to distinguish the essential differences between the many new roofs which have lately been erected, and the type of roof and gallery I advocate.

S. HURST SEAGER [F.].

PICTURE GALLERY LIGHTING: MR. HURST SEAGER'S METHODS.

Mr. George Northover, the late Editor of the JOURNAL, writes:—

Referring to Mr. Hurst Seager's letter in your last issue, may I, as editor of the JOURNAL when Mr. Seager's original communication appeared, be permitted to mention that his Paper at that time raised the question of art gallery and museum lighting on to a plane of scientific exactitude which it had never before reached. This is clear from the bewildering discussions on the subject at the Institute and elsewhere, when various solutions of the problem advocated by some of the debaters were promptly controverted by others. Mr. Seager's Paper was published in the JOURNAL of 20 November 1912—ten years ago. The war has blotted out much that under normal conditions the memory would have retained, and it will be useful, perhaps, to recall the late Mr. C. C. Brewer's Godwin Bursary Report on American Museum Buildings [JOURNAL, 12 April 1913], where he refers to the dissatisfaction among American Museum directors at the buildings provided for their collections, a dissatisfaction, he says, which shows itself largely in indiscriminate abuse of architects, whom the directors effect to regard as hindrances to museum progress. Mr. Brewer asks "whether a speedier way to the ideal museum building than abuse of the architects might not be found in a careful study of existing buildings and of the weary crowds that pass through them, with an effort to discover which rooms seem the most attractive, and why?—which method of lighting or arrangement causes the crowd to linger, etc., etc.?"

Mr. Seager's Paper shows that he had already taken the speedier way pointed to. In 1907 and 1908 he had gone to all the principal British, French, Italian and some of the German galleries, and his illuminative Paper gives the matured fruit of his studies. The conclusions arrived at, the reasons for them, and his own solutions of the problems involved are described at length and elucidated by diagrams and photographs. He proves to demonstration that his method of top side-lighting by means of a row of vertical windows on each side of the central part of the roof, the roof covering of this central part being raised above the windows, is capable of being applied in various ways and

to all usual forms of rooms. Mr. Seager's efforts, it is pleasing to record, are bearing fruit in various directions. In America, France and Holland the directorates of the national galleries have come to regard him as the pioneer of scientific lighting, and warmly commend his methods. Quite lately he gave by invitation a demonstration of his ideas at the Louvre, Paris, his audience on the occasion comprising the directors of the Louvre and similar institutions in France and many distinguished French architects. The gratification Mr. Seager expresses in the last number of the JOURNAL at finding his ideas confirmed and his actual design reproduced in the Report of the National Physical Tests [JOURNAL, 21 October] can be well understood. One would like to have seen, however, in the Report, some acknowledgment to the author of the methods favoured by the scientists as a result of their inquiry.

The Library

GESCHICHTE DES BAROCK IN SPANIEN. By Otto Schubert, 40, Esslingen, A.N. 1908. 8s. [Esslingen A.N. Paul Neff Verlag (Max Schreiber).]

An exhaustive account of the rise, culmination and fall of the Baroque style in Spain, with German text and some 300 illustrations. Although the richer examples might act as useful deterrents to the inventors of new styles, the planning of these buildings shows a refreshing fertility of invention, and the boldness of composition in mass and light and shade deserves close study. H. M. F.

BRUNO PAUL: His Life and Work. 40. Munich n.d. 18s. [Bruckmann, Munich.]

A volume of reproductions of the work of a well-known German architect of to-day. It consists very largely of his domestic work, and the many illustrations (mostly of interiors and treatment of furniture) show a discretion and reticence in design not usually associated with modern German architects and designers.

C. H. T.

ARCHITECTURAL DRAWING. By Wooster Bard Field, 40 New York, 1922. £1. [McGraw-Hill Book Co., Inc., 370, Seventh Avenue, New York.]

Compiled by an American professor of engineering, drawing for the benefit of the architectural draughtsman. This book contains the usual chapters on Instruments, Perspective, Shadows, Lettering, Classic Orders, etc., with numerous explanatory diagrams. In addition, a number of plates of American working drawings as prepared to be issued to contractors in blue print form, with the varied hatching and cross-hatching employed when coloured working drawings are abandoned. There is also a complete table of the symbols generally used by draughtsmen when preparing these drawings.

G. D.

TÜREN UND TORE AUS DEUTSCHLAND, ÖSTERREICH UND DER SCHWEIZ. By Dr. Ludwig Nolte-Bürner, 40, Stuttgart. 10s. [Stuttgart, Verlag von Julius Hoffmann.]

This book contains over 350 photographic illustrations of old doorways and gateways—ranging from Romanesque to Renaissance and Rococo, with a few Gothic specimens—in Germany, Austria and Switzerland, a few of them dated, and amongst them many interesting examples, although somewhat debased in character. There is a short introduction by C. H. Baer, but no descriptive details, and no drawings.

L. A.

The Architecture Club

The second quarterly dinner of the Architecture Club was held on Friday evening, 10 November, at the Hotel Cecil. The company of members and guests numbered about 100. Mr. J. C. Squire was in the chair.

Mr. Charles Aitken, in proposing the toast of the Club, said that such an architectural welter as the south side of Piccadilly Circus and Trafalgar Square worried him, and he spoke of the influence that buildings had on people. He said that the good proportions and refined detail of the house that he lived in as a boy had made a great impression on him. This house was designed by John Carr, the architect of York, who also designed the Crescent at Buxton. He pleaded with architects to provide space in building for mural decoration.

Mr. Gilbert Scott, in responding, said that the Club was formed to improve public appreciation of good architecture, but somewhat stultified his argument by adding that he preferred the criticism of the entirely ignorant man, who always laid his finger on the weak spot in a design. Perhaps it is the half educated man on whom Mr. Scott hopes the Club will have a beneficial effect.

Mr. O. P. Milne, in submitting "The Guests," said that the presence among them of so large and distinguished a body of guests during the excitement of a general election might perhaps be taken to show that they appreciated the importance of modern architecture, and that when politicians and their policies were mere matters of history, the buildings put up to-day would remain to show what was our way of life.

Mr. William Rothenstein, responding in an interesting speech, said that we should praise good work wherever we found it.

Mr. Hilaire Belloc also responded. Speaking as a layman, he said he considered present-day architecture chaotic, but "style" would evolve. We could take it from him, as Moses said when he came down from Mount Sinai, "that we could rebuild our towns in any scale we wished, if we would only realise it, without impoverishing the community."

In making a statement of the work and aims of the Club, Mr. J. C. Squire said that he was going to give a few facts, which had not been the strong point of the evening speeches. The Club had decided to hold an Exhibition of Architecture, entitled "Twenty Years of British Architecture," during March next at Grosvenor House, which had been kindly lent to the Club for the purpose by the Duke of Westminster. Architects would be invited to submit photographs and models.

Sir Lawrence Weaver proposed "The Future of the Arts." He disagreed with Mr. Gilbert Scott that there was too much talking, and thought that the most interesting conversation he had ever missed was on the occasion when Sir John Evelyn, Sir Christopher Wren, and Mr. Pepys went down to see Greenwich Hospital. The architecture of the future must be a just combination of tradition with invention.

Mr. Charles Marriott looked for the day, he said, when architecture would come back to the fundamentals of brick and stone. There had been too much designing on paper.

Allied Societies

NORTHERN ARCHITECTURAL ASSOCIATION.

Mr. T. R. Milburn [F.], in the course of his Presidential address to the Northern Architectural Association on 8 November, said: "An encouraging sign of the times to our profession is the increasing interest taken by the public in architecture. This stimulating of the public interest by our great journals should be looked on with favour by all societies associated with the art."

Unification and registration must in the coming year engage our earnest attention, and I would ask: Is not our aim something more than to shut up the unqualified man who calls himself an architect? That is only a phase of our profession and a circumstance of the hour. Our aim should be to qualify him to be an architect, to make him fit to be one of us, and, if this is not possible, to aim at his successor becoming one of us and a unit of a united profession. My idea of unification and registration is to unite first, and I have already put my views before the Institute through the Council of Allied Presidents—that all is not done that might be done by the Institute. I consider that a roll call should be made by the Institute and Allied Societies of all practising architects and their staffs, and that all pupils and assistants should be approached and appealed to by the Institute officially to qualify for membership. I know a great deal is done in this way by principals, but not always, and a continued movement by the Institute would be bound to be attended by good results. I think if this were done we would get so much larger a membership that registration would follow easily. This appeal, I may say, has attracted the notice of the Cape Institute of Architects, whose secretary has written to say that the Cape Institute has been particularly interested in the scheme to further the inducement for every young architect to qualify for the Institute.

The elections, however, have overturned the policy of the Council of the Institute, and we as members must be loyal to the majority. If 50 per cent. of voting members returned a majority for the present registration proposals for the Institute, and 50 per cent. of the members did not trouble to vote, then it is clearly the duty of the governing body to frame a policy to conform with the majority voting. This is being done, and no doubt we will shortly have laid before us a Registration Bill for consideration. But I still maintain that a united profession is the higher aim. Meeting as we have to-night means unification, every little help we give to each other means unification, the friendly acceptance of our little defeats one over another helps unification, the encouragement and help extended to those under our care means unification, the aid we give to our local associations, our loyalty to the Institute and the care we take with our daily work all make for unification and registration, or registration and unification, whichever you prefer.

Has it ever occurred to you how the scope of the work of an architect has increased during the last few years, at least the work of the provincial architect? I think my remarks do not apply so much to London architects. We provincial men are now called upon to advise on many subjects not provided for in the curriculum of our examina-

ALLIED SOCIETIES

tions or mentioned in our text-books, and I may mention a few which I would advise all young men to pursue as opportunity affords. Compensation under the Licensing Act of 1904, although in substance is based on the technical details of the brewing trade, is, in the preparation of claims, interwoven with information which can only be properly supplied by our profession in advising on alterations to the property after the licence is removed, the calculation as to the altered value of the house, and an estimate of the depreciation of fixtures. Then we all remember the Finance Act of 1910 for the imposition of Increment Duty. The first stoppage of house building was due to its agency, and the want of houses led to its repeal. The provisions of this Act furnished welcome work to those of our ranks who made themselves familiar with it.

At the present time property owners are flooded with yellow forms to fill in, to set forth annual values for the new assessment for Schedule "A" and Inhabited House Duty, and I feel sure that many of us will be called in to advise or to give our services in cases of appeal. Dilapidations are a recognised subject in our text-books, but we are all now more familiar with "Marching-in statements" than we were before the war. Architects' valuation work of all kinds has grown in demand, and much technical work under this head should come our way, such as valuation for upkeep, mortgage, assessment, advising on sale or purchase, etc. The up-to-date architect must keep himself in close touch with the Town Planning Acts, Factory Acts as applied to building work, the State-aided housing schemes, relaxation of Building By-laws, and all the time war-time measures still cling to our everyday life—rents restrictions and defence of the realm measures and restrictive legislation.

The necessary qualifications and aptitude for giving evidence and being able to face cross-examination should be closely followed by our younger men. It is not given to everyone to be what is called a good witness, and those entering the profession who are capable should follow this up and train for it, as good men in this line are scarce.

The Rent Protection Act may go another year or two. Its repeal is of the utmost importance to us. The provision of the Act, which was passed so that during war-time and the shortage of houses rents should not be abnormally raised, has sometimes been shamefully abused by profiteering tenants, who, availing themselves of the provisions of the Act by sub-letting, have reaped a harvest denied to the legitimate owner. The ownership of the houses in many cases has not been worth while owing to low rents, increased cost of repairs, taxation, rates, etc. The consoling fact is that affairs are getting stabilised and houses with vacant possession are not bringing such abnormal prices, ruling values are more level—whether houses are occupied or vacant—and so soon as this position arrives the Act can with safety be repealed. The great solution, of course, is the provision of more houses, and this will only come when private builders get into their own and are secure against unreasonable legislation such as rent restriction or increment duty. I cannot see why an owner of a house should ever have been charged or threatened with a tax because the value of his property had increased, any more than the holder of a block of railway shares should be charged on the ground that his shares had

increased owing to a larger travelling public. I feel I will not be popular when I say that I am not so sure of the case for architects designing workmen's houses on scale fees. The fact is, a workman's house, to let at an economic rent, will not stand large fees, and I think we ought to get into touch more with builders who will undertake the development of estates and agree on a reasonable fee that will be contributory to a business proposition.

One of the many problems that are continually cropping up in our everyday life is varying costs, and another the keeping of ourselves up to date with new materials. The problem of cost is most difficult and variable, and a percentage of reduction on war cost or an addition on pre-war cost cannot be applied on strict scale to all buildings. Some materials have varied very differently as to cost compared with others, and the variation in cost, of course, is differentiated according to the particular material or amount of labour that predominates. Personally, I think we have about touched the lower level. Cost of building will never be down to pre-war figures, and as new works are started by the advent of better trade and house building is stabilised once more, there will be a tendency towards costs increasing. You need to keep in close touch with the varying markets nowadays to be able to present a reliable estimate. Generally, however, I should say we stand now at about 90 per cent. above pre-war figures.

With respect to the second of my problems, I am old-fashioned as to choice of materials. Give me a good slate roof for efficiency and economy, good brick walls, steel construction and reinforced concrete floors. I would, however, like a word on steelwork. A good, well constructed timber roof of stout memel or Riga redwood has a long life and is sound building construction. Such a roof on inspection sixty or seventy years after erection shows little change and gives confidence, but with respect to steel roofs, we put them up, the hatch is closed, and, except the electrician who goes up to repair his mains, who cares what is going on? The owner has the outside and inside painted as occasion demands, but beyond the coat of paint at the works, steel roofs are very seldom looked at. These roofs are often put up during wet weather, and scaling and deterioration sets in, and I often wonder how the construction will compare with the old timber roofs after long years of trial. Regular painting even every ten years would do a lot.

With respect to ferro-concrete, it is often difficult to decide whether this form of construction will be economical. It has many advantages and in some buildings prudence dictates its use, and so we go on to decide as to the merits of asbestos, slates, new forms of floors, new floor coverings, patent partitions, patent glazing, asphalt covering, artificial stone, the many felt coverings, waterproof cement, patent plaster, fibrous plaster, patents in all kinds of joinery work, stair treads, new systems of hot water supply, heating systems, gas or electricity, lighting, ventilation, and oil and water paints. In all these items there are continually new proposals on which we must be prepared to advise. In these days of advertising, our clients very often see them even before we do, and it may be awkward to plead ignorance.

One of the dangers that I see in our profession is overcrowding. The avenues leading up to the practising archi-

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tect are now inviting and alluring; the various schools now well established in all centres, the lure of scholarships, the attractiveness of the profession, growing public interest, housing, fair and open competition, all tend to attract more men to follow the art. We are rather worse off than doctors and lawyers, because the overcrowding tends to encourage public authorities to run their own architects' departments, to the disadvantage of the practising architect. However, there is always room for the industrious as well as the best, and, after all, what a really interesting, clean and wholesome profession it is! None of us, I suppose, are really ever dull or bored with our work—always change, always new problems to be overcome, and the joy of our visits to old buildings and our ability to trace the history and age from a pillar or two, a bit of foundation or a base, and in our imagination reconstruct them.

BIRMINGHAM ARCHITECTURAL ASSOCIATION

The first General Meeting of the Session of the Birmingham Architectural Association was held on Friday, 3 November. Mr. Rupert Savage, F.R.I.B.A., the President, in the course of his address, dealing with the influence on architecture of popular opinion, said:—

"Architecture is one of the most important demonstrations of national character, and its achievement may be considered a reflex of popular sentiment.

"If we consider the great epochs of building activity, we find that the nobler developments of architecture are coincident with great political and commercial activities. The architectural splendours of Greece and Rome were the outward expression of intense national energy. The great public buildings were frequented by the common people, and the public squares and market-places were a source of pride to the citizens generally.

"In the middle ages the predominant sentiment of religious fervour and civic pride found expression in ambitious churches and public buildings, while at a later period the masterpieces of the Renaissance were the outcome of an immense revival in the realm of scholarship and culture. It cannot be doubted that these great architectural achievements were due in no small measure to a popular desire for some visible demonstration of wealth and power. It must surely be a source of wonder to many that we are to-day unable, or unwilling, to emulate the great works of the past.

"It must be remembered that many of the great constructions of the earlier centuries were rendered possible by the use of servile labour. Then again, the simpler scale of living among all but the wealthiest class released for great constructional works labour now employed in manufacture; while, lastly, there was a conscious desire on the part of the people, or their rulers, for some abiding evidence of their own greatness.

"The present generation does not realise the poverty of its environment. A sort of mean materialism frustrates all the efforts of the altruistic spirit. The poor modern building of the recent past seems to have overlaid and effaced traditional work in most English towns in a greater degree than appears in many Continental towns. Even in new and partly developed countries, such as Brazil and Argentina, the cities are being planned on an ambitious scale, and

we find that the inhabitants of these fine cities are quite conscious of the value of their inheritance.

"In this country the great restraining influence on architectural design and town-planning has been the worship of so-called 'efficiency.' We rightly demand that our buildings and streets shall be conveniently planned; but we show great reluctance to make any sacrifice to mere beauty. A big effort has recently been made to improve the housing conditions of the working-class, but in these undertakings the cult of ugliness prevails.

"The responsibility for the past must be shared by the public and the profession. The public knew nothing of good architecture, while the architects were for the most part inadequately trained and educated. During the last few years there has been a marked improvement in both respects, but before we reach a satisfactory standard two conditions are indispensable—public appreciation and professional efficiency. The ignorance and indifference of the public in matters architectural is largely due to lack of publicity. It is possible editors may think that the public is not interested in the subject, but it should be remembered that the popular interest displayed in other arts is largely stimulated and developed by the enlightened criticism of the newspaper press. While preaching to our fellow citizens, we must remember that if we demand increased confidence in ourselves and respect for our art, we must do our utmost to deserve them.

"Much has been done in recent years to systemise and improve the training of young architects; but in order to further our efforts for professional improvement and to give the public that confidence which we desire, we need some form of compulsory qualification, and we feel that this may best be attained by an Act of Parliament restricting the use of the title 'architect' to those holding a diploma from some responsible body such as the R.I.B.A. Our aim is not wholly selfish; we desire not only to gain public appreciation of our art and a better status for architects, but to hasten the abolition of all that is mean and squalid in our present environment, and to encourage the gradual up-building of cities which shall be worthy of a great nation."

At the close of the paper a vote of thanks to the President was proposed by Mr. H. T. Buckland, F.R.I.B.A., seconded by Mr. G. Salway Nicol, F.R.I.B.A., and carried unanimously.

THE BRISTOL SOCIETY OF ARCHITECTS.

The Union of the Bristol Society of Architects and the Gloucestershire Architectural Association has been approved by the Council of the Institute.

VISIT TO THE WORKS OF MESSRS. FARMER AND BRINDLEY.

The Art Standing Committee have arranged a visit to the works of Messrs. Farmer and Brindley, Ltd., marble masons, of 63 Westminster Bridge Road, S.E.1, on Saturday, 9 December 1922, at 10.30 a.m.

The visit is arranged for the morning in order that actual work in progress may be inspected, and it is hoped that architectural students will join in the visit.

Members of the R.I.B.A. and their friends, and students of the architectural schools, who wish to take part in this visit should apply to the Secretary R.I.B.A., by whom tickets will be supplied.

NOTICES

ARCHITECTS AND LIMITED LIABILITY COMPANIES.

The Council of the Royal Institute have passed a resolution to the effect that it is undesirable for members or Licentiates of the Royal Institute to form themselves into limited liability companies for the purpose of carrying on the profession of an Architect.

REGISTRATION.

The Registration Committee have submitted a draft Bill for the Registration of Architects which has been approved in principle by the Institute Council, who have directed that it should be sent to the Allied Societies for their comments.

Competitions

"THE MODERN HOSPITAL" COMPETITION FOR SMALL HOSPITAL PLANS.

The Modern Hospital Publishing Company, of Chicago, has promoted an Architectural Competition for Small Hospital Plans. Premiums of \$500, \$300 and \$200 will be paid to the authors of the designs placed first, second and third by the jury. Architects desiring to take part in the Competition should write immediately to the Modern Hospital Publishing Co., 22 East Ontario Street, Chicago, Illinois, U.S.A. Designs must be delivered not later than 1 February 1923, and intending Competitors are expected to register their names with the Architectural Adviser, Mr. Richard E. Schmidt, 104 South Michigan Avenue, Chicago, Illinois, U.S.A., before 15 December next. A copy of the Conditions of the Competition can be seen in the Library of the Royal Institute of British Architects, 9 Conduit Street, W.1.

IAN MACALISTER,
Secretary.

Notices

I. THE THIRD GENERAL MEETING.

The Third General Meeting (Business) of the Session 1922-1923 will be held on Monday, 4 December 1922, at 8 p.m., for the following purposes:—

To read the Minutes of the General Meeting (Ordinary) held on 20 November 1922; formally to admit members attending for the first time since their election.

To proceed with the election of the candidates for membership whose names were published in the JOURNAL for 21 October 1922 (pp. 637-40), and 11 November 1922 (pp. 28-32)

THE SCALE OF PROFESSIONAL CHARGES.

The Chairman will move the following resolution:—

That Clause 9 of the Scale of Professional Charges be omitted, and that a foot-note be added to the Scale calling the attention of members to the General Housing Memoranda of the Ministry of Health embodying the fees for housing work now in operation.

II. SPECIAL GENERAL MEETINGS.

NOTICE IS HEREBY GIVEN that a General Meeting will be held at No. 9, Conduit Street, W.1, on Monday the 4th day of December 1922, at 8.15 p.m., for the purpose of considering and, if thought fit, passing the following resolution:—

That the Council be authorised to create a Mortgage or otherwise to charge all or any the leasehold and freehold property of the Institute as the Council shall think fit, to secure the sum of £20,000 and interest, and to execute such deeds and documents as may be required in connection therewith.

AND NOTICE IS ALSO GIVEN that a further General Meeting will be held at the same place on the 18th day of December 1922, at 7.55 p.m., when a Report will be furnished of the proceedings at the General Meeting to be held on the 4th day of December 1922, and the above-mentioned resolution will, if passed by the requisite majority at the meeting, be submitted for confirmation.

Dated this 24th day of November 1922.

IAN MACALISTER,
Secretary, R.I.B.A.

APPLICATIONS FOR ELECTION.

The following applications for Election have been received. Notice of any objection or other communication respecting the Candidates must be sent to the Secretary for submission to the Council prior to Monday, 18 December 1922:—

AS FELLOWS (5).

EPPS: WALTER MAXTED [A. 1908], 616-617 Bank Chambers, 329 High Holborn, W.C.; The Bungalow, Kidbrooke Gardens, Blackheath, S.E.

FOURACRE: JOHN LEIGHTON [A. 1905], Lloyds Bank Chambers, Bank Street, Plymouth; 16 Portland Square, Plymouth.

SOLOMON: DIGBY LEWIS, B.Sc.Lond. [A. 1907], 133 Moor-gate, E.C.2; 14 Harley Road, N.W.3.

THOMPSON: CHARLES WILLIAM WARD [A. 1911], Bank Chambers, High Street, Rochester; "Rozel," Borstal Road, Rochester.

WALKER: THOMAS [A. 1913], County Offices, Trowbridge, Wilts; Bath Road, Devizes, Wilts.

AS ASSOCIATES (4).

DEVEREUX: WALTER ALAN [Passed 5 years' course at Architectural Association, London—Exempted from Final Examination after passing Examination in Professional Practice], c/o Architectural Association, 34 Bedford Square, W.C.

DUNN: ALICK STEAD [Special War Examination], Municipal Architect, Bombay Municipality, Boki Bunder, Bombay, India.

MOODIE: IAN ALEXANDER [Passed 6 years' course at Robert Gordon's Technical College, Aberdeen—Exempted from Final Examination after passing Examination in Professional Practice], 137 Clifton Road, Aberdeen.

SCOTLAND: GEORGE BRUCE [Passed 5 years' course at Glasgow School of Architecture—Exempted from Final Examination after passing Examination in Professional Practice], Mossiel, Airdrie.

JOURNAL OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS

SIR CHRISTOPHER WREN'S BICENTENARY

In connection with the Sir Christopher Wren Bicentenary ceremonies a memorial volume consisting of papers on various aspects of Sir Christopher Wren's life and work by authoritative writers, will be published under the auspices of the Royal Institute of British Architects and the St. Paul's Cathedral authorities. The profits accruing from the sale of the volume will be devoted to the St. Paul's Restoration Fund. Messrs. Hodder and Stoughton are to be the publishers.

Members' Column

BIRMINGHAM CENTRAL SCHOOL OF ARTS AND CRAFTS.

Applications are invited for the Post of Director of the School of Architecture vacant on 8 January 1923 by the retirement of Mr. W. H. Bidlake, M.A., F.R.I.B.A. The commencing salary, which will be between £400 and £600 per annum, will be determined by the selected candidate's qualifications, experience and time to be given by him. Canvassing, direct or indirect, will disqualify. Application forms and further particulars may be obtained from the Secretary, Central School of Arts and Crafts, Margaret Street, and forms must be returned to him by 6 December.

P. D. INNES,
Chief Education Officer.

MR. SYDNEY TATCHELL.

Mr. Sydney Tatchell [F.], Surveyor to the Ironmongers' Company, has been appointed Architect for the design and erection of the Company's new Hall in Aldersgate.

SCOTLAND:

SCOTTISH Architect in practice in Edinburgh. A.R.I.B.A., F.S.I., is prepared to collaborate with London Architects having commissions in any part of Scotland. Apply Hon. Secretary, Edinburgh A.A., 14, Hill Street, Edinburgh.

APPOINTMENTS WANTED.

A.R.I.B.A. with experience in design and supervision of varied work wishes to assist other Architect, either in his own office or as an Assistant with view to Partnership.—Box 1611, c/o Secretary R.I.B.A., 9, Conduit Street, London, W.1.

DISABLED A.R.I.B.A. (26) desires position with private Architect, London preferable but not imperative. Working drawings, details, specifications and good knowledge of quantities.—Apply Box 256, c/o Secretary, R.I.B.A., 9, Conduit Street, W.1.

ASSOCIATE with twenty years' experience in London desires to render immediate assistance. All-round knowledge of planning, designing and general supervision of large contracts.—Apply Box 444, c/o Secretary, R.I.B.A., 9, Conduit Street, London, W.1.

ARCHITECT desires share of office in London with another where occasional assistance is required, or would take management of office on reciprocal terms.—Apply Box 454, c/o Secretary, R.I.B.A., 9, Conduit Street, London, W.1.

Minutes II

SESSION 1922-23.

At the Second General Meeting (Ordinary) of the Session 1922-23, held on 20 November 1922, at 8 p.m., Mr. Paul Waterhouse, President, in the chair. The attendance book was signed by 10 Fellows (including 6 members of the Council), 13 Associates (including 2 members of the Council), 5 Licentiates, and a number of visitors. The Minutes of the Meeting held on 6 November 1922 having been taken as read, were signed as correct.

The Hon. Secretary announced the decease of:—

HON. FELLOW.

His Highness the Maharajah of Jaipur, elected Hon. Fellow 1891.

FELLOWS.

William Black, of South Africa, elected a Fellow in 1902.
Walter John Burrows, elected a Fellow in 1903.
James Crocker, of Exeter, elected a Fellow in 1886.
Alexander Percy Durlacher, elected a Fellow in 1921.
Arthur Harrison, of Birmingham, elected a Fellow in 1902.
Henry Thomas Gordon, elected a Fellow in 1881.
Richard Mauleverer Roe, elected Associate 1881, Fellow 1889.
Arthur Henry Reid, of South Africa, elected Associate 1881, Fellow 1889.
Howard Henry Thomson, of Leicester, elected Associate 1889, Fellow 1906.

RETIRED FELLOWS.

William Larking Bernard, elected Fellow 1889, and placed on Retired List in 1919.
John Bryce, elected Fellow in 1879, and placed on Retired List in 1908.
Walter James Ebbetts, elected Associate 1875, Fellow 1882, and placed on Retired List in 1913.
Alfred Williams, elected Fellow 1888, and placed on Retired List in 1918.

HON. ASSOCIATE.

Sir Thomas Brock, K.C.B., R.A., elected an Hon. Associate in 1908.

ASSOCIATES.

George Beaumont, of Chicago, elected Associate 1881.
Cyril Cliff Cheek, elected Associate 1916.
Robert Saxton Bessant, elected Associate 1895, Resigned 1909.
Septimus Cecil Searle, elected Associate 1879.

LICENTIATES.

Harvey Mennie, elected Licentiate 1910.
John Alfred James, elected Licentiate 1910.
Basil Thorold Stallybrass, elected Licentiate 1911.
Collins Beatson Young, elected Licentiate 1910.

HON. CORRESPONDING MEMBER.

Don Enrique Maria Repulles Y Vargas, of Madrid, elected an Hon. Corresponding Member in 1901.

And it was RESOLVED that the regrets of the Royal Institute for their loss be entered in the Minutes.

Mr. Lawrence M. Tye having read a Paper on "Illuminating Engineering in Relation to Architecture," and illustrated it by lantern slides, a discussion ensued, and on the motion of Sir J. Herbert Parsons, President of the Illuminating Engineering Society, seconded by Mr. W. R. Rawlings, Past President of the Electrical Contractors' Association, a vote of thanks was passed to Mr. Tye by acclamation, and was briefly responded to.

The meeting closed at 10.5 p.m.

Arrangements have been made for the supply of the R.I.B.A. JOURNAL (post free) to members of the Allied Societies who are not members of the R.I.B.A. at a specially reduced subscription of 12s. a year. Those who wish to take advantage of this arrangement are requested to send their names to the Secretary of the R.I.B.A., 9 Conduit Street, W.1.

Members sending remittances by postal order for subscriptions or Institute publications are warned of the necessity of complying with Post Office Regulations with regard to this method of payment. Postal orders should be made payable to the Secretary R.I.B.A., and crossed.

IAN MACALISTER,
Secretary R.I.B.A.

R.I.B.A. JOURNAL.

Dates of Publication.—1922: 11th, 25th November; 9th, 23rd December. 1923: 13th, 27th January; 10th, 24th February; 10th, 24th March; 14th, 28th April; 12th May; 2nd, 16th, 30th June; 14th July; 18th August; 22nd September; 20th October.

